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MAY 2 1927

# PROCEEDINGS

of the

## American Society

of

## Civil Engineers

TWO PARTS



PART I

MAY, 1927

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ANNUAL CONVENTION, DENVER, COLO.  
JULY 13-16, 1927

# CURRENT PAPERS AND DISCUSSIONS

			Discussion closed
"Straight Line Plotting of Skew Frequency Data."	R. D. GOODRICH.....	Aug., 1926	
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"Distribution of Reinforcing Steel in Concrete Beams and Slabs."	BOYD S. MYERS.....	Aug., 1926	
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"The Ancient Roman Aqueduct at Athens."	JAMES F. CASE.....	Sept., 1926	Uncert
"Producing Concrete of Uniform Quality."	RODERICK B. YOUNG.....	Sept., 1926	
Discussion.....	Nov., 1926, Jan., Feb., Mar.,	May, 1927	Closed
"Water-Ratio Specification for Concrete."	F. R. McMILLAN and STANTON WALKER.....	Sept., 1926	
Discussion (Authors' closure).....	Nov., Dec., 1926, Jan., Mar., Apr.,	May, 1927	Closed
Unit Stresses in Structural Materials: A Symposium.....		Sept., 1926	
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"Water-Proof Masonry Dams."	W. WATERS PAGON.....	Oct., 1926	
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"Experimental Deformation of a Cylindrical Arched Dam."	B. A. SMITH.....	Oct., 1926	
Discussion.....	Feb., Apr.,	May, 1927	Uncert
"The Design, Construction and Operation of a Small Sewage Disposal Plant."			
FRANKLIN HUDSON, JR.....		Oct., 1926	
Discussion (Author's closure).....	Dec., 1926, Jan., Feb.,	May, 1927	Closed
"Town Planning and Its Relations to the Professions Involved."	JOHN NOLEN.....	Oct., 1926	
Discussion (Author's closure).....	Nov., Dec., 1926, Jan., Apr.,	May, 1927	Closed
"The Development of Mariemont, Ohio."	FREDERICK H. FAY.....	Oct., 1926	
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"The Cincinnati City Plan is Now Law."	GEORGE B. FORD.....	Oct., 1926	
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"Hexagonal Planning, Traffic Interceptor and Orbit."	NOULAN CAUCHON.....	May, 1927	
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Garbage Disposal: A Symposium.....		Oct., 1926	
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"The New York State Barge Canal and Its Operation."	ROY G. FINCH.....	Oct., 1926	
Discussion (Author's closure).....	Nov., Dec., 1926, Jan., Apr.,	May, 1927	Closed
"Quantities of Materials and Costs per Square Foot of Floor for Highway and Electric-Railway Long-Span Suspension Bridges."	J. A. L. WADDELL.....	Nov., 1926	
Discussion.....	Feb., Apr.,	May, 1927	May, 1927
"Venturi Tube Characteristics."	J. W. LEDOUX.....	Nov., 1926	
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"Storage Required for the Regulation of Stream Flow."	CHARLES E. SUDLER.....	Dec., 1926	
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"The Stresses in a Free Prismatic Rod Under a Single Force Normal to Its Axis."			
JOSEPH N. LE CONTR.....		Jan.,	
Discussion.....	Apr.,	May,	May, 1927
"Tests of Manhole Covers."	T. J. CORWIN, JR.....	Jan.,	May, 1927
"North Carolina Bituminous Earth Roads."	WILLIAM B. CATCHINGS.....	Jan.,	May, 1927
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"Recent Developments in Concrete Pavements."	H. ELTINGE BREED.....	Jan.,	May, 1927
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"Construction Methods on the Moffat Tunnel."	R. H. KEAYS.....	Feb.,	Aug., 1927
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"Economic and Engineering Problems of Highway Location"	W. W. CROSBY.....	Feb.,	May, 1927
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"Civil Engineering Features of the Hell Gate Station."	ERNEST M. VAN NORDEN		
and GEORGE A. HUGHES.....		Mar.,	Aug., 1927
"The Civil Engineering Features of the Kearny Power Station."	ROMAN VON FABRICE.....	Mar.,	Aug., 1927
"Automobile Hazard in Cities and Its Reduction."	WILLIAM J. COX.....	Apr.,	Aug., 1927
"Water Supply for Army Railways in France."	PAUL M. LABACH.....	Apr.,	Aug., 1927
"Probability of Flood Flows."	F. G. SWITZER.....	Apr.,	Aug., 1927

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# AMERICAN SOCIETY OF CIVIL ENGINEERS

## PROCEEDINGS

VOL. LIII

MAY, 1927

No. 5

### SOCIETY AFFAIRS

#### DENVER MEETING AND A SUMMER TOUR

##### Attractive Trip for Society Members

The Golden West beckons to every member as plans for the Summer Meeting are announced. So many attractions are listed that any emphasis on one appears as a slight to every other.

In the first place, there is the meeting itself—at Denver, July 13 to 16, 1927. This will be the Fifty-Seventh Annual Convention, replete with addresses, technical sessions, pleasure trips, and social events. Sharing with the meeting in possible appeal, is the three-week tour arranged by Henry Tours, Inc., for the accommodation of members, their friends, and families, who may wish to attend the Society meeting and at the same time enjoy a comprehensive tour of the Rocky Mountain region.

The coming trip under the same favorable leadership as last year's successful

tour to Seattle and Alaska promises to equal the high standard already realized. Those who enjoyed the good fellowship and glorious scenery of the 1926 tour have become the most ardent supporters of this new method for combining Society meetings, scenic wonder trips, social events, and good fellowship.

Official notices of both the meeting and the tour will be available in due time. This information is being issued as a sort of preliminary, so that no member may miss this unusual opportunity for lack of sufficient advance notice.

A mere skimming over of the proposed visits will give a sufficient idea of the attractiveness of the entire tour. As the itinerary is arranged, it will be possible for members throughout the entire eastern part of the country to enjoy practically the whole trip with the congenial company of fellow engineers. Parties may join from New England, the Atlantic Coast, Pittsburgh, Chicago, St. Louis, and Kansas City. A summary of the schedule is as follows:

			Standard Time
Thursday	July	7	Lv. New York (Baltimore & Ohio) 8:38 A. M.
Friday	"	8	Ar. Chicago (Grand Central Station) 9:00 A. M.
			Lv. Chicago (Wabash-Dearborn Station) 11:30 A. M.
			Ar. St. Louis (Delmar Ave.) 5:51 P. M.
Saturday	"	9	Lv. St. Louis (Delmar Ave.) 12:10 A. M.
			Ar. Kansas City 7:30 A. M.
			Lv. Kansas City (Mo. Pac.) 9:55 P. M.
Sunday	"	10	Ar. Denver (D. & R. G. W.) 3:30 P. M.
Monday	"	11	Lv. Denver early morning for Rocky Mountain National-Estes Park Tour.
Tuesday	"	12	Return to Denver, evening

			Standard Time
Wednesday	July 13	At Convention	
Thursday	" 14	" "	
Friday	" 15	Lv. Denver (D. & R. G. W.)	8:15 A. M.
		Ar. Colorado Springs, Trip to Garden of the Gods, etc.	10:55 A. M.
Saturday	" 16	At Colorado Springs	
		Pike's Peak	
Sunday	" 17	Lv. Colorado Springs (D. & R. G. W.)	7:15 A. M.
		Ar. Pueblo, Trip to San Isabel National Forest	8:30 A. M.
Monday	" 18	Lv. Pueblo (D. & R. G. W.)	8:30 A. M.
Tuesday	" 19	Ar. Salt Lake City (D. & R. G. W.)	8:30 A. M.
		Lv. Salt Lake City (Union Pacific Station)	8:30 P. M.
Wednesday	" 20	Ar. West Yellowstone	7:30 A. M.
		Lv. " "	9:30 A. M.
		Ar. Old Faithful	11:55 A. M.
Thursday	" 21	Lv. Old Faithful	1:50 P. M.
		Ar. Yellowstone Lake	4:55 P. M.
Friday	" 22	Lv. Yellowstone Lake	10:00 A. M.
		Ar. Grand Canyon	12:00 Noon
Saturday	" 23	Lv. Grand Canyon	1:30 P. M.
		Ar. Mammoth Hot Springs	4:48 P. M.
Sunday	" 24	Lv. Mammoth Hot Springs	9:00 A. M.
		Ar. West Yellowstone	12:00 Noon
		Lv. " "	12:45 P. M.
		Ar. Gallatin Gateway	5:00 P. M.
		Lv. Gallatin Gateway (C. M. & St. P.)	Midnight
Monday	" 25	En route.	
Tuesday	" 26	Ar. Minneapolis (C. M. & St. P. Station)	7:30 A. M.
		Lv. Minneapolis (Chicago, Gt. Western)	7:40 P. M.
Wednesday	" 27	Ar. Chicago (Grand Central Station)	8:30 A. M.
		Lv. Chicago (B. & O.—Grand Central Station)	10:00 A. M.
Thursday	" 28	Ar. New York City (Pershing Sq. Station)	3:14 P. M.

#### Colorado Resorts

The visit to Rocky Mountain National Park will precede the Denver Meeting itself. This park is easily reached from Denver through beautiful country. The fact that it is the most popular of all the National parks in point of number of visitors, is sufficient recommendation indeed. This visit will make a pleasant preparation for the activities of the meeting to follow.

Denver itself needs no praise—its wonders and hospitality are well known. During the stay there, members will be in the hands of the Committee on Local Arrangements, who guarantee there will be no idle moments or heavy hanging time.

Colorado Springs will provide a day and a half of entertainment. The Garden of the Gods, Cheyenne Mountain, and Pike's Peak itself will be combined in this visit. Although these are old friends to many, they never cease to exert a powerful appeal to lovers of Nature.

The San Isabel National Forest will claim one day of the trip. This locality, although of quite recent development, has

attained a rapid popularity. Its charm is in its roughness and naturalness. The lover of nature unspoiled will glory in the few hours spent here.

#### Salt Lake via Royal Gorge

Of all the transcontinental scenery, the Royal Gorge of the Arkansas River holds, perhaps, the most popular appeal. This remarkable canyon, the ingenuity of railroad construction through it, and the unusual "hanging bridge", a distinctive engineering achievement, will fascinate every visitor. This entire day through glorious and stupendous mountain scenery forms a striking contrast with the flatter Salt Lake and Great Basin country beyond.

Salt Lake City is beautiful; its surroundings are picturesque in the extreme; and its history as the home of the Mormon people is most interesting. Opportunity for a unique bath in Great Salt Lake, a visit to the Mormon Tabernacle, and the remarkable mines at Bingham—the greatest open cut copper mines in the world—will all contribute to make a profitable day.



### Yellowstone

No one needs to be urged to go to Yellowstone National Park. Among those of the Great West, it is one of the oldest, and yet its popularity seems to increase year by year. It presents everything that would appeal to one who loves the beauties or the wonders of Nature. Wild life, wild mountain country, wild canyons, and wild water-falls abound; but these are not all—geysers, hot springs, and fantastic geological formations appear on every hand. Perhaps nowhere has such a multitude and variety of Nature's handiwork been crowded into so small a compass.

One of the newer features of this ever attractive Park is the Gallatin Gateway, which the party will use in coming out of the Park. This has been opened less than a year. For miles this roadway follows along the western boundary of the Park through virgin country. This all-day drive will form a fitting conclusion of the glorious five days spent in the Yellowstone. Thence the party will turn homeward.

### Utmost Convenience

The general details of the arrangements are in the hands of Mr. Henry. Reservations are all made in advance, side trips arranged, and baggage cared for en route. A single payment takes care of all necessary expenses except the cost of the meeting proper—meals and social events. A wide experience in handling such tours has shown the details which are most essential and the entertainment most appreciated. Every want is anticipated so that the member leaves behind him any worry about the trip or accommodations and confines himself solely to the enjoyment of the tour.

The tour, including the Denver Meeting, will occupy 22 days. The entire cost from New York City and return, will amount to about \$410 up according to Pullman accommodations, being proportionately less for shorter participation. Inquires should be addressed directly to William J. Henry, 565 Fifth Avenue, New York. A detailed folder of the trip will be issued shortly. The official program for the Denver Meeting will be mailed to members early in June. Those who wish to combine a Society meeting, a Rocky Mountain tour, and delightful fellowship may well plan to join with other members in this attractive summer vacation.

### Meeting of Executive Committee March 29, 1927

The Executive Committee met on March 29, 1927, at Society Headquarters; President John F. Stevens in the Chair; George T. Seabury, Secretary; and present, also, Messrs. Chevalier, Davison, Hazen, and Hoyt.

The minutes of the meeting of the Committee held on December 19, 1926, were approved as adopted by the Board.

A Committee on Zones and Districts for 1927 was appointed as follows: Messrs. A. J. Hammond, *Chairman*, H. W. Dennis, and George L. Lucas.

Action was also taken, or recommendations made, on many matters of Society business, preceding the meeting of the Board of Direction at the time of the Spring Meeting of the Society.

### Director Con M. Buck Resigns

Resignation of Con M. Buck, M. Am. Soc. C. E., as Director of the Society representing District No. 14, has been received under letter dated March 16. Mr. Buck gives as reason for this action, his ill-health and prospective inability to properly serve in this office.

Mr. Buck's regrettable decision comes at the time when he was just starting in the work for which he was elected last January, and before he had really taken on duties which could not lightly be given up. His many friends in the Society, and especially those in District No. 14, will sympathize with him in his endeavor to regain his health. According to the Constitution the election of a successor must be made by the Board of Direction.

### Graduating Students and the Employment Service

One of the advantages of affiliation in Student Chapters of the Society that is not fully recognized (or at least not fully utilized) is the free use of the Engineering Societies Employment Service.

About this time of year many members of Student Chapters who are expecting to graduate in a few weeks are wondering just what the future will offer in the way of positions. On the other hand, many employers are also wondering how they are to get the young engineer who is especially fitted for their particular work. The Employment Service is the connecting link between these two needs.

As a general rule, the demands for young graduates has exceeded the number of applicants to the service, so that, judging at least by past experience, there seems to be no good reason why the graduating members from any Student Chapter of the Society should long be without a permanent connection.

To make the matter more pointed and easier for the student, the Society is having the Bulletins issued by the Employment Service during the spring months sent free to all Student Chapters. In case it has not otherwise been brought forcefully to the attention of every senior student, this notice will serve to remind them of the benefits that are at their disposal in common with every other member of the Society in the form of the Employment Service. Many engineers demand young men trained according to the standards required of colleges represented by Society Student Chapters.

It is no more than fair that each member should avail himself of the superior advantages implied by such membership. The Employment Service is ready to help, if it is given a chance. The necessary information and blanks are willingly forwarded—address the Engineering Societies Employment Service, 33 West 39th St., New York, N. Y.

### SUMMER SCHOOL FOR ENGINEERING TEACHERS

#### Society for the Promotion of Engineering Education Adopts New Plan

Perfection of the teaching of engineering is to be carried one step farther; the teacher is to subject himself to a course of scientific training. Such is the thought back of the decision of the Society for the Promotion of Engineering Education to establish a summer school for engineering teachers. The first sessions are to be held during the coming summer and for this the Carnegie Corporation has already appropriated funds.

#### Development of Project

The establishment of the school is an outgrowth of the extensive investigation of engineering education which that Society has been conducting for the past three years. The project was suggested by W. E. Wickenden, Director of Investigation, as a result of his study of a similar school conducted in England. The project has been considered in detail by the Committee on Teaching Personnel (under the investigation) which formally

recommended that it be undertaken at as early a date as possible.

Two sessions of the school, each of approximately three weeks' duration, will be held during the first year. Cornell University and the University of Wisconsin have been tentatively selected as sites, and negotiations have been opened with the authorities of those institutions. It is expected that tuition charges will be limited to a nominal registration fee and that costs of meals and rooms will be quite low.

#### Schedule of Work

The work of the school will center around the teaching of particular subjects of the engineering curriculum. The teaching of mechanics has been selected for the first sessions since that subject is fundamental to all branches of engineering. The work will be divided into three principal divisions: (a) The teaching of pure mechanics (analytic mechanics); (b) the teaching of the applications of mechanics in related fields; and (c) the exposition of methods of teaching in general.

Morning sessions will be devoted to lectures, demonstrations and laboratory exercises designed to illustrate methods of presenting particular divisions of the subject. The organization, content, and scope of courses in mechanics will be discussed. Methods of teaching will be presented partly by precept and example and partly by lectures devoted to teaching methods in general. Afternoon sessions will be devoted to group discussions and to analyses of the work of the mornings. Evenings will be devoted to lectures on general topics relating to engineering education and to recreation. The teaching staff will be selected from among the foremost teachers of the engineering colleges and from among the faculties of Teachers' Colleges and Departments of Education of the Universities.

#### The Teacher Taught

The bringing of groups of the ablest and most promising younger teachers into contact with leaders having different points of view and different methods of presentation, with adequate opportunity for free discussion, presents a forward step in the teaching of the basic subjects of the engineering curriculum. The undertaking, which virtually brings the school to the instructor, and assembles for his benefit a staff of the leading teachers of engineering and of educational methods, may prove of significance in the general field of higher education for the professions.

For the first year, at least, the school will be conducted under the general supervision of the Board of Investigation and Co-ordination, Society for the Promotion of Evening Education, which Board is charged with the duty of conducting the general investigation of engineering education. Immediate supervision will be in the hands of H. P. Hammond, M. Am. Soc. C. E., Associate Director of Investigation.

### Society Appointments

Members have been appointed to act for the Society in the following capacities:

American Engineering Standards Committee; Sectional Committee on Methods of Test of Road Material: T. R. Agg, A. N. Johnson, Members, Am. Soc. C. E., and H. S. Mattimore, Assoc. M. Soc. C. E.

Advisory Committee on Bridge Tests on Swift Island Bridge, North Carolina: Clyde T. Morris, M. Am. Soc. C. E.

American Marine Standards Committee, Division of Simplified Practice, U. S. Department of Commerce: Leo Otis Colbert, Harry A. Seran (Alternate), Members, Am. Soc. C. E.

American Engineering Standards Committee, Sectional Committee on Safety Code for Cranes, Derricks, and Hoists: Carleton Greene, George Perrine (Alternate), Members, Am. Soc. C. E.

International Congress of Soil Science, Washington, D. C., June 13-22, 1927: Robert A. Cummings, M. Am. Soc. C. E.

### Columbia Scholarship for 1927-28

Applications for the scholarship in engineering at Columbia University, for which the Society is allowed to make nominations, are now receivable, to be effective in September, 1927, for the ensuing college year.

The general details of this work are already familiar to members; likewise the standing of the University among engineering schools needs no explanation. While a member of a Student Chapter or a Junior of the Society receives preference in the award of this scholarship, it is open to any young engineer of character and training, who has satisfactorily completed three years or more of college work in a University of recognized standing.

The Society in sponsoring this award is bringing the matter at this time to the attention of all eligible young engineers

in order that the necessary inquiries may be made at an early date, and the winner notified in time to make ample preparation for beginning his work in the fall. Full details as to conditions of the award and advantages of the training offered may be had by applying to the Secretary, 33 West 39th Street, New York, N. Y.

### ARC WELDING PRIZES

#### Lincoln Electric Company Sponsors Competitions to Be Conducted by the American Society of Mechanical Engineers

In a desire to improve the art of arc welding and to indicate the advantages and economics of its use, the Lincoln Electric Company, of Cleveland, Ohio, has made available three prizes. These are to be awarded to the best papers on the subject of arc welding, in the amounts of \$10 000, \$5 000, and \$2 500. The conduct of this competition is in the hands of the American Society of Mechanical Engineers, which will appoint judges and give the ceremonies of award a prominent place in a future meeting.

The advantages of arc welding have long been recognized, especially in the construction and repairing of machinery. Even in the civil engineering field the process has attained some popularity, especially in erecting structural steel for building. Members who may be interested in this competition should apply to the American Society of Mechanical Engineers, 29 West 39th Street, New York, N. Y. Complete information and rules of the competition will be furnished.

### Manual of Endurance of Metals Under Repeated Stress

The issuance at this time of a brief but inclusive manual on the much studied subject known as Fatigue of Metals represents several years of work and several co-operating agencies. In 1919, National Research Council, the University of Illinois, and Engineering Foundation joined forces for a new attack on this old problem. The Council appointed an advisory committee; the University provided the director, staff and facilities for the research; and the Foundation supplied a substantial fund to pay for special equipment. A number of industries co-operated by contributing funds, materials, and information.

While this investigation has been progressing, several others have been con-

ducted by Government bureaus and by industries, with little, if any, wasteful duplication. Large additions have been made to the knowledge of this subject, but the reports were scattered in numerous scientific and engineering publications, and some results have not been printed. There were requests, therefore, to have the information collected, condensed, and put into a form convenient for use by engineers.

Engineering Foundation undertook to meet the need by asking Professor H. F. Moore, in charge of the investigation at the University of Illinois, to draft a brief summary, or manual, and by inviting several other investigators to examine the draft and make changes or additions. All responded most generously. The Foundation, consequently, is able to present in this small book an up-to-date statement of knowledge of Fatigue of Metals in a form which, it is hoped, will prove useful to designing, operating, and testing engineers.

The book will be 5 by 7½ in., bound in cloth with stiff boards. Price, postpaid, \$1.00. Orders and remittances should be sent to Engineering Foundation, 29 West 39th Street, New York, N. Y.

### Memorial to the Late Charles Addison Ferry

Many engineers earn lasting memorials; few, however, get them. One of the more fortunate is the late Charles Addison Ferry, M. Am. Soc. C. E., who is to have a memorial tablet on one of his more important engineering monuments.

Mr. Ferry was a devoted son of Yale. Perhaps he is even better known as the designer of the Yale Bowl and Resident Engineer on its construction. The memorial tablet in bronze will be placed on the structure of the Bowl itself near the southwest corner, over one of the portals. The exercise will take place Monday, June 20, at 11:00 A. M., and will be of interest to Yale men and to engineers, whether or not graduates of Yale.

Mr. Ferry died in 1924, having been a member of the Society for more than 40 years. Many of his friends will wish to meet in New Haven next June to do honor to his memory. The Chairman of the Committee having this event in charge is E. M. T. Ryder, M. Am. Soc. C. E., who, on behalf of the Committee, extends a warm invitation to all those interested.



## Local Sections\*

**Central Illinois.**—February 23, 1927. This was a Dinner Meeting which was participated in by the University of Illinois Student Chapter. The principal address was delivered by Mr. Charles B. Burdick, of the firm of Alvord, Burdick and Howson, of Chicago, who spoke on the Chicago-Lake Michigan Diversion Problem. Mr. Burdick was followed by Frank T. Sheets, Chief Engineer, State Division of Highways, who spoke on some of the problems and plans of the Highway Division. Attendance 73.

**Central Ohio.**—March 17, 1927. Plans were discussed for the 1927 Fall Meeting of the Society and other business was transacted. Dean E. A. Hitchcock, of the Ohio State University, addressed the Section on the work of the Experiment Station at the University. Attendance 35.

**Colorado.**—March 16, 1927. A regular meeting of the Section was held at the University Club, Denver, following a dinner. The subject under discussion was "Reclamation". Elwood Mead, Commissioner, U. S. Bureau of Reclamation, outlined the program of the Bureau and Mr. P. J. Preston, of Yuma, Ariz., gave some interesting sidelights on the Colorado River. Mr. F. A. Banks, of the Snake River Valley, presented figures from his projects in Idaho, and Mr. L. M. Lawson, of El Paso, Tex., reported on the production in the Rio Grande Valley. Mr. J. L. Lytel, of Yakima, Wash., and Mr. W. R. Young, of Ellensburg, Wash., also addressed the meeting. Attendance 66.

**Dayton.**—April 11, 1927. The monthly noonday luncheon meeting was held at the Engineers Club. W. W. Morehouse, Director, Department of Water, City of Dayton, presented several reels of motion pictures of various construction jobs done by the City during the past year, including bridges, concrete sewers, and pavements. Attendance 20.

**Detroit.**—April 4, 1927. Lt. Col. G. B. Pillsbury, a member of the Joint Board of Engineers, gave an illustrated talk on "The St. Lawrence Waterway". Mr. David A. Molitor presented some data comparing the St. Lawrence and Georgian Bay routes. Attendance 125.

**Duluth.**—March 21, 1927. After the business meeting J. B. Finch, President of the Arrowhead Bridge Company, gave an informal talk on the bridge which is under construction across the St. Louis River between Duluth and Superior, Wis. Maps of the location were distributed and photographs of the structure were used to illustrate the talk. Attendance 24.

**Kansas (State).**—The following officers will serve during 1927: President, P. L. Brockway; Vice-President, R. H. Pennartz; Secretary-Treasurer, F. W. Epps.

**Northwestern.**—The following officers will serve for 1927: President, A. S. Cutler; First Vice-President, George M. Shepard; Second Vice-President, D. B. Fegles; Secretary-Treasurer, H. D. Lovering.

**Philadelphia.**—March 25, 1927. A special meeting of the Section was held in the Reception Room of the Mayor, City Hall, Philadelphia. The subject under discussion was "The Improvement of Our Water Resources Through

\* For list of Local Section Officers, Rules, etc., see 1927 Year Book, p. 104.

Co-Operation of the State Municipalities and Industries." The speakers were as follows: Dr. Theodore B. Appel, Secretary of Health, Chairman, Sanitary Water Board, Harrisburg, Pa.; W. L. Stevenson, Chief Engineer, State Department of Health, Harrisburg, Pa.; Harrison P. Eddy, Consulting Engineer, Boston, Mass.; Charles B. Hall, President, City Council, City of Philadelphia; Charles A. Jobson, Manager, Technical Dept., New York and Pennsylvania Company, Lock Haven, Pa.; Arch. F. Jones, Chief Counsel, Elk Tanning Company, Ridgway, Pa.; S. M. Swaab, Consulting Engineer to the Mayor, City of Philadelphia. Attendance 300.

**Portland (Ore.).**—March 18, 1927. After the business meeting Mr. P. O. Harding explained his improved arc and computing device for a transit. Mr. C. B. McCullough then spoke on "Maintenance of Highway Bridges", illustrating his remarks with slides. He outlined the methods which have gradually been developed by the Bridge Department of the Oregon State Highway Commission for which he is Engineer. Attendance 21.

**Sacramento.**—March 1, 1927. Surveyor-General W. S. Kingsbury addressed the Section on "The Duties of the Surveyor-General". Attendance 31.

March 8, 1927. Mr. Joseph W. Gross read a paper on "Observations on Gauge Heights of the Sacramento and American Rivers During the February, 1927, High Water". Attendance 30.

March 15, 1927. Mr. George L. Dillman, a graduate of the United States Naval Academy, addressed the Section on "A Law of Satellites" which he has discovered, using a gyroscopic top, mounted as a satellite, to prove his contentions. Vice-President Walter L. Huber was a guest at this meeting. Attendance 35.

March 22, 1927. Mr. Herbert H. Jaqueth, of the city planning firm of Bartholomew and Associates, St. Louis, Mo., that has been retained by the City of Sacramento, addressed the Section on "City Planning", illustrating his talk with many charts and maps. The following six groups of studies are necessary and are made in the order named: Streets, Transit, Transportation, Recreation, Civic Art, and Zoning. Attendance 18.

March 29, 1927. The regular weekly meeting of the Section, was held at the Hotel Sacramento. Mr. Jack Kennedy, of the Celite Manufacturing Company, of San Francisco, gave an illustrated talk on "Diatomaceous Earth". Director Henry D. Dewell, of San Francisco, and Mr. Walter N. Frickstad, of Oakland, were present as guests. Attendance 20.

**St. Louis.**—March 28, 1927. The Committee on the Revision of the Section Constitution reported. Mr. William C. E. Becker then gave an address on "Down Town Building Foundations". Attendance 42.

### Student Chapters\*

**Villanova College.**—March 4, 1927. At the regular monthly meeting of the Chapter, George H. Shaw, M. Am. Soc. C. E., delivered an interesting lecture on "Vitrified Pipe and Sewage Disposal". Attendance 25.

\* For list of Student Chapters, Officers, etc, see 1927 Year Book, p. 109.

## Engineering Societies Library

The services of the Engineering Societies Library are available to all members who wish searches, copies, translations, etc., or advice on technical literature. A collection of modern books is also available for loan to members in North America, at moderate rentals. Correspondence should be addressed to the Director, Engineering Societies Library, 29 West 39th Street, New York, N. Y., who will gladly give information concerning the charges for the various kinds of work. A more comprehensive statement in regard to this matter will be found on pages 126 and 127 of the Year Book for 1927.

### Book Notices\*

(March 1 to March 31, 1927)

**Die Auskleidung von Druckstollen und Druckschächten.** By Otto Walch. Berlin, Julius Springer, 1926. 188 pp., illus., diagrams, pl., 10 x 7 in., paper. 19,50 r. m.

In this review of present practice in lining pressure shafts and tunnels, the author discusses the forces generated and their action and the loss of water, together with the methods of lining adopted in many pressure tunnels, and their efficiency.

**Der Bau Langer Tiefliegender Gebirgstunnel.** By C. Andreae. Berlin, Julius Springer, 1926. 151 pp., illus., diagrams, 10 x 7 in., paper. 13,20 r. m.

The purpose of this work is to make easily available the technical and scientific results obtained during the construction of the great Alpine tunnels. The topics discussed include drilling, removal of rock, geological conditions, ventilation, cooling, systems of tunneling, methods of construction, lining, sanitation, and costs.

**Der Eisenbau.** By Luigi Vianello. Third Edition. Munich u. Berlin, R. Oldenbourg, 1927. 617 pp., diagrams, tab., 9 x 6 in., paper. 30.-r. m.

This reference book for structural engineers presenting practical and theoretical data is brief, yet clear. It is a convenient handbook for the designer of bridges and steel buildings.

**Handbuch der Steinkonstruktionen.** By Otto Frick. Berlin, Willy Geissler Verlag, 1927. 500 pp., illus., diagrams, tab., 11 x 8 in., paper. 18.-r. m.

As a comprehensive text on masonry construction, this book covers practical questions and serves as a handbook to builders. It considers the physical properties of masonry materials, foundations, and water-proofing, brick and stone buildings in detail, and, finally, concrete and reinforced concrete structures.

**Journal of the Royal Technical College, No. 3, December 1926.** Glasgow, 1926. 180 pp., 10 x 7 in., paper. 10s 6d.

This number of the *Journal* describes some of the researches carried out at the college, including the overstraining of steel by tension, a simple method of comparing heat-insulating materials, the passage of electricity through dilute solutions, the overheating of mild steel, and some physical properties of duralumin.

**Mathematical Analysis for Engineers.** By Miles a. Keasey. Phila., The Author, 1926. 193 pp., 9 x 6 in., leatherette. \$2.75.

As an extension of mathematics beyond the treatment given in texts on algebra, geometry, and trigonometry, this book is intended for students of engineering in evening schools. It is restricted to those principles of co-ordinate geometry and calculus which apply most directly to engineering practice.

**Moderne Grundbautechnik, t. 2; Theorie der Tiefschochtgründungen mit der Grundkörpermaschine.** By Ottokar Stern. Berlin, Wilhelm Ernst & Sohn, 1927. 56 pp., illus., diagrams, 8 x 5 in., paper. 2,70 r. m.

\* The statements made in these notices are taken from the books themselves and this Society is not responsible for them. Unless otherwise specified, the books in this list have been donated by publishers.

This pamphlet discusses, from a theoretical and a practical point of view, the application of the "compressol" system to deep foundations, foundations under water, etc. It includes the dynamics and statics of the problem with examples of special applications.

**Non-Technical Chats on Iron and Steel.** By La Verne W. Spring. New Edition. N. Y., Frederick A. Stokes Co., 1927. 465 pp., illus., tab., 9 x 6 in., cloth. \$4.00.

This revised and enlarged edition presents a popular, readable account of the iron industry, describing the metallurgical and mechanical processes of the blast-furnace, steel works, foundry, and rolling-mill.

**Railway Fuel.** By Eugene McAuliffe. N. Y., Simmons-Boardman Pub. Co., 1927. 468 pp., illus., diagrams, forms, tab., 9 x 6 in., cloth. \$5.00.

This study of the fuel situation in relation to the operating costs and earnings of railroads, discusses production, purchase, transportation, and use of both coal and oil. The author pictures the difficulties that beset the coal industry, and suggests remedies for some of its ills.

**Simplified Roof Framing.** By J. Douglas Wilson and S. O. Werner. (Vocational Texts.) N. Y., McGraw-Hill Book Co., 1927. 122 pp., illus., 9 x 6 in., cloth. \$1.40.

This textbook for industrial high schools and trade schools, requires no knowledge of mechanical drawing or geometry.

**Steel Construction.** By Henry Jackson Burt. New Edition. Chic., American Technical Society, 1927. 396 pp., illus., diagrams, tab., 9 x 6 in., cloth. \$2.50.

This text presents underlying principles, formulas, and data used in designing the structural framework of steel buildings. It is fitted for students with a limited knowledge of mathematics, but can also be used as a handy reference book.

**Ueber Niederschlag und Abfluss im Hochgebirge.** By Otto Lütshg. (Verbandsschrift, No. 14. Veröffentlichung der Hydrologischen Abteilung der Schweizerischen Meteorologischen Zentralanstalt in Zürich.) Zürich, Schweizerischer Wasserwirtschaftsverband, 1926. 479 pp. illus., diagrams, maps, tab., 12 x 9 in., paper. \$8.00.

This is an exhaustive study of precipitation and run-off in the region of Mattmark, in the Pennine Alps. In addition to its direct bearing on the question of the power resources of Switzerland it is of interest for its scientific conclusions of general applicability.

**Umlenkung Eines Freien Flüssigkeit-Strahles an Einer Senkrecht zur Strömungsrichtung Stehenden Ebenen Platte.** By Friedrich Reich. (Forschungsarbeiten auf dem Gebiete des Ingenieurwesens, Heft 290.) Berlin, V. D. I. Verlag, 1926. 74 pp., illus., diagrams, tab., 11 x 8 in., paper. 8,-r.m.

This study of the proper form for draft-tubes of hydraulic turbines shows the distribution of velocity and pressure in concentric draft-tubes with flat plates.

**Utilizzazione delle Acque per Irrigazione.** By Corrado Ruggiero. Padova, Casa Editrice Dott. A. Milani, 1926. 494 pp., illus., diagrams, 10 x 7 in., paper. (Price not quoted.)

As a comprehensive textbook on irrigation, this surveys the subject systematically, giving attention both to theory and to practice.

### Additions to the Reading Room

**Municipal Index.** Fourth Annual Edition. N. Y., American City Magazine Corporation, 1927. 710 pp., illus., diagrams, tab., maps, 10 x 7 in., cloth. \$4.00.

This, it is stated, is a yearbook of useful information for city, town, and county officials, and for all others interested in municipal and public improvement activities. The progress of the year in municipal government and in city planning is recorded. Included in this volume are bibliographies, and condensed catalogs of 260 manufacturers, occupying 406 pages and comprising a useful source of information for buyers of equipment and supplies for municipalities.

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## Current Civil Engineering Literature

### Key to Abbreviated References to Publications Indexed\*

Abbreviated References.	Publication.	Place.
Am. C. Inst.....	American Concrete Institute, Proceedings (Y.)	Detroit
A. I. E. E.....	American Institute of Electrical Engineers Journal (M.)	New York
A. R. E. A.....	American Railway Engineering Association, Proceedings (Y.)	Chicago
A. S. T. M.....	American Society for Testing Materials, Proceedings (Y.)	Philadelphia
Am. Soc. C. E.....	American Society of Civil Engineers, Proceedings (M.)	New York
Am. Soc. Mun. Impvts..	American Society for Municipal Improvements, Proceedings (Y.)	New York
Am. W. W. Assoc.....	American Water Works Association, Journal (M.)	Baltimore
Am. Wood Pres. Assoc..	American Wood Preservers Association, Proceedings (Y.)	Chicago
Ann. P. et C.....	Annales des Ponts et Chaussées (Bi-M.)	Paris
Ann. T. P. Belg.....	Annales des Travaux Publics de Belgique (Bi-M.)	Brussels
Assoc. Ing. Gand.....	Association des Ingénieurs sortis des Ecoles Spéciales de Gand (Q.)	Ghent
Bost. Soc. C. E.....	Boston Society of Civil Engineers, Journal (M.)	Boston
Can. Engr.....	Canadian Engineer (W.)	Toronto
Cornell C. E.....	Cornell Civil Engineer (M.)	Ithaca
Dock & Harbour.....	Dock and Harbour Authority (M.)	London
Eng. ....	Engineering (W.)	London
Eng. & Contr.....	Engineering and Contracting (W.)	Chicago
Eng. Inst. Can.....	Engineering Institute of Canada, Journal (M.)	Montreal
Eng. N. R.....	Engineering News-Record (W.)	New York
Engrs. Soc. W. Pa.....	Engineers' Society of Western Pennsylvania, Journal (M.)	Pittsburgh
Engr. ....	Engineer (W.)	London
Engrs. & Eng.....	Engineers and Engineering, Engineers' Club of Philadelphia (M.)	Philadelphia
Gas und Wasser.....	Gas und Wasserfach (W.)	München
Gen. Civ.....	Le Génie Civil (W.)	Paris
Gesund. Ing.....	Gesundheits Ingenieur (W.)	Munich
Inst. C. E.....	Institution of Civil Engineers Minutes of Proceedings (Q.)	London
Inst. Mun. & Co. Engrs..	Institution of Municipal and County Engineers, Journal (W.)	London
Int. Ry. Cong. Assoc....	International Railway Congress Association, Bulletin (M.)	Brussels
Land. Arch.....	Landscape Architecture (M.)	Harrisburg
Mech. Eng.....	Mechanical Engineering (M.) Journal of the American Society of Mechanical Engineers	New York
Mil. Engr.....	Military Engineer (Bi-M.)	Washington
Min. & Metal.....	Mining and Metallurgy (M.) American Institute of Mining Engineers	New York
Mun. & Co. Eng.....	Municipal and County Engineering (M.)	Indianapolis
N. E. W. W. Assoc....	New England Water Works Association, Journal (Q.)	Boston
N. Y. R. R. Club.....	New York Railroad Club, Proceedings (M.)	Brooklyn
Oest. Ing. Arch. Ver....	Oesterreichischer Ingenieur und Architekten Verein, Zeitschrift (F.)	Vienna
Power .....	Power (W.)	New York
Rev. Gen.....	Revue Générale des Chemins de Fer (M.)	Paris
Ry. Age .....	Railway Age (W.)	New York
Ry. Eng. & Main.....	Railway Engineering and Maintenance (M.)	Chicago
Schw. Bauz.....	Schweizerische Bauzeitung (W.)	Zurich
Scl. Am.....	Scientific American (M.)	New York
Soc. Ing. Civ. Fr.....	Société des Ingénieurs Civils de France, Mémoires et Comptes Rendus (Q.)	Paris
Tech. Gemein.....	Technisches Gemeindeblatt (F.)	Berlin
Ver. deu. Ing.....	Verein deutscher Ingenieure, Zeitschrift (W.)	Berlin
West. Constr. N.....	Western Construction News (F.)	San Francisco
West. Ry. Club.....	Western Railway Club, Proceedings (M.)	Chicago
West. Soc. Engrs.....	Western Society of Engineers, Journal (M.)	Chicago
Zeit. Bau.....	Zeitschrift für Bauwesen (Q.)	Berlin
Z. d. Bauer.....	Zentralblatt der Bauverwaltung (W.)	Berlin

\* Y = Yearly; Q = Quarterly; M = Monthly; F = Fortnightly; W = Weekly.

## A. Applied Sciences

### a. Processes of Calculation

#### 2. Graphical and Nomographical Processes

Straight Line Plotting of Skew Frequency Data.\* Discussion: Mar., '27.

Charts Check Costs and Progress in Dam Building.\* Dan Patch. Eng. N. R. Mar. 24, '27.

#### 3. Stresses and Strains

Strength Tests of 69 Large Steel Solid-Web Columns.\* Eng. N. R. Mar. 17, '27.

Les Conditions d'Application de la Théorie des Pièces Prismatiques Chargées de Bout et la Formule de Rankine.\* (The Conditions of Application of the Theory of End-Loaded Prismatic Pieces, and the Rankine Formula.) F. Chaudy. Gen. Civ. Feb. 26, '27.

## B. Applied Mechanics

### a. Mechanics of Solids (Strength of Materials)

#### 3. Jointed Systems

Bestimmung der Einflussordinaten des Horizontalschubes von Zweigelenkbogen und -rahmen beliebiger Form durch Schätzung.\* (Determination by Estimation of the Influence Coordinates of the Horizontal Thrust of Double Hinged Arches and Frames of Any Form.) W. Br. Gutacker. Oest. Ing. Arch. Ver. Feb. 4, '27.

#### 4. Riveted Systems

The Economics of Crane Girder Design.\* Edward G. Fiegehen. Engr. Feb. 25, '27.

#### 6. Heterogeneous Solids (Reinforced Materials)

Distribution of Reinforcing Steel in Concrete Beams and Slabs. Discussion: John J. Gould. Am. Soc. C. E. Mar., '27.

### b. Hydraulics

#### 3. Industrial Hydraulics

Cost of Operating Motor Driven Centrifugal Pumps.\* Leo Hudson and A. J. Richards. Am. W. W. Assoc. Mar., '27.

Hydro-Electric Power Developments on the Gatineau River.\* J. A. McCrory. Eng. Inst. Can. Mar., '27.

Erecting a High-Head Penstock on the Balch Project.\* Eng. N. R. Mar. 10, '27.

Charts Check Costs and Progress in Dam Building.\* Dan Patch. Eng. N. R. Mar. 24, '27.

Die Regulierung des Bodensees für Hochwasserschutz, Kraftnutzung und Schifffahrt.\* Regulation of Lake Constance for Flood Prevention, Power and Navigation.) W. Sattler. Schw. Bauz. Feb. 5, '27.

### c. Pneumatics

#### 3. Industrial Pneumatics

Air Pollution in English and Scotch Towns and Cities. John B. C. Kershaw. Engr. Feb. 25, '27.

Industrial Applications of the Flettner Rotor.\* F. O. Willhoff. Mech. Eng. Mar., '27.

## C. Materials of Construction and General Processes

### a. Lime, Cement, Mortar, Concrete, Brick, Bitumin, Timber, etc.

Density of Concrete and the Water-Cement Ratio.\* F. R. McMillan. West. Soc. Engrs. Jan., '27.

Water-Ratio Specification for Concrete. Discussion: John G. Ahlers. Am. Soc. C. E. Mar., '27.

Producing Concrete of Uniform Quality. Discussion: John G. Ahlers. Am. Soc. C. E. Mar., '27.

Unit Stresses in Structural Materials.\* A Symposium. Discussion: Clement E. Chase. Am. Soc. C. E. Mar., '27.

The Why and How of Better Concrete.\* Edward K. Smith. Mil. Engr. Mar.-Apr., '27.

Proportioning Pit-Run Aggregate in Concrete.\* J. H. Griffith. Eng. N. R. Mar. 10, '27.

### b. Metals

Généralisation pour un Profil Quelconque des Résultats de l'Expérience du Professeur C. Bach.\* (Generalization of the Results of the Work of Professor C. Bach for Any Profile.) D. Wolkowitsch. Gen. Civ. Feb. 12, '27.

### c. Preservation and Use of Materials, Painting, Waterproofing

Report on Iron and Steel Structures. (Am. Ry. Eng. Cong.) Ry. Age (Daily ed.). Mar. 10, '27.

Report of Committee on Wood Preservation. (Am. Ry. Eng. Assoc.) Ry. Age (Daily ed.) Mar. 11, '27.

### f. Rock Excavation, Mining, Rock Removal

Abstracts of Institute Papers. Min. & Metal Mar., '27.

### g. Execution of Works, Specifications

#### 1. Of Masonry

Wiederherstellung der Veste Coburg durch Professor Bodo Ebhardt 1898-1924.\* (Reconstruction of the Coburg Castle by Professor Bodo Ebhardt, 1898-1924.) Oscar Doering. Zeit Bau. Pt. 1, '27.

**2. Of Concrete**

Report of the Committee on Masonry.\* (Am. Ry. Eng. Assoc.) Ry. Age (Daily ed.) Mar. 11, '27.

High-Early-Strength Concrete Speeds Stadium Building.\* Eng. N. R. Mar. 24, '27.

**4. Of Metal**

Steel **I** Beams Haunched with Concrete.\* H. M. Mackay. (Paper read before Am. Inst. Steel Constr.) Eng. & Contr. Feb., '27.

Auditorium Floor Is Level or Inclined as Desired.\* Eng. N. R. Mar. 24, '27.

**5. Of Reinforced Concrete**

Immeuble de Rapport, à Paris, avec Combles en Béton Armé.\* (Co-operative Building with Reinforced Concrete Roofs, in Paris.) E. Delan. Gen. Civ. Feb. 26, '27.

**x. Miscellaneous**

A Few Building Code Fundamentals. Frank P. Cartwright. Cornell C. E. Feb., '27.

**h. Foundation, Bridge Piers, and Abutments**

Building a Difficult Mat Foundation at 53-Ft. Depth in Cleveland Sand and Clay.\* Richard P. Wallis. Eng. N. R. Mar. 3, '27.

**k. Tunnels and Tunneling-Shield**

Shield Safeguards Train Movements in Tunnel Replacement.\* Charles Carswell. Eng. N. R. Feb. 24, '27.

New York to Build Four Miles of Shield Tunnel Under Difficult Conditions.\* Eng. N. R. Feb. 24, '27.

Pennsylvania Rebuilds Tunnel Under Adverse Conditions.\* Ry. Age Mar. 5, '27.

Designing a Ventilation System for a Vehicular Subway in California.\* Merton C. Collins. Eng. N. R. Mar. 10, '27.

The Moffat Six-Mile Tunnel, Colorado.\* West. Constr. N. Mar. 10, '27.

Deep Water Caisson Sinking, Carquinez Strait Bridge.\* George J. Calder. Eng. N. R. Mar. 24, '27.

Exécution d'un Tunnel Sous-Fluvial à l'Abri d'une Dalle Continue en Béton Armé. Traversée de la Sprée par le Métropolitain Electrique de Berlin.\* (Construction of an Under-River Tunnel with the Protection of a Reinforced Concrete Continuous Slab. Crossing of the Sprée by the Electric Metropolitan of Berlin.) Gen. Civ. Feb. 12, '27.

Ueber Personentunnel.\* (On Pedestrian Tunnels.) Rudolf Kern. Oest. Ing. Arch. Ver. Feb. 4, '27.

Luftwiderstand und Druckverlauf bei der Fahrt von Zügen in einem Tunnel.\* (Air Resistance and Pressure During the Passage of Trains in a Tunnel.) Walter Tollmeier. Ver. deu. Ing. Feb. 5, '27.

**D. Highways****c. Construction**

Concrete Highways. H. F. MacWilliams. Bost. Soc. C. E. Feb., '27.

Control of Construction Unit Costs Through Design. T. Warren Allen. (Paper read before Am. Road Bldrs' Assoc.) Eng. & Contr. (Roads & Streets) Feb., '27.

Progress in Sub-Grade Soil Investigations. Frank H. Eno. (Paper read before Am. Road Bldrs' Assoc.) Eng. & Contr. (Roads & Streets) Feb., '27.

Construction of Bituminous Macadam Pavements.\* Squire E. Fitch. (Paper read before Asphalt Pav. Conference.) Eng. & Contr. (Roads & Streets) Feb., '27.

Structural Design of Concrete Roads.\* Leroy M. Hersum. Bost. Soc. C. E. Feb., '27.

Notes on Some Granges Used in Road Work. Bernard H. Knight. Inst. Mun. & Co. Eng. Feb. 15, '27.

Topping and Widening the Boston Post Road.\* C. G. Nichols. Eng. N. R. Feb. 24, '27.

The Mexican National Highway System.\* P. K. Schuyler. Mil. Engr. Mar.-Apr., '27.

Street Widening in Chicago. J. A. Moore. (Paper read before Ill. Soc. Engrs.) Eng. & Contr. (R. & S.) Mar., '27.

When May Concrete Pavements Be Open to Traffic.\* H. F. Clemmer. Eng. & Contr. (R. & P.) Mar., '27.

Drainage Problems in an Indiana County. H. C. Morrison. (Paper read before Purdue Univ.) Eng. & Contr. Mar., '27.

Maintaining Oregon's Highway Bridges.\* C. B. McCullough. (Paper read before Am. Assoc. State Highway Officials.) Eng. & Contr. (R. & S.) Mar., '27.

Granite Block Paving with Asphalt Filler. C. M. Pickney. (Paper read before Asphalt Assoc.) Eng. & Contr. (R. & S.) Mar., '27.

Alignment and Grades of County Roads.\* W. J. Moore. Can. Engr. Mar. 1, '27.

Organizing Work on Township Roads. W. M. Abraham. (Paper read before Conference on Road Construction.) Can. Engr. Mar. 1, '27.

Four-Lane Flexible Paving Slab for Concrete Streets.\* F. M. Balsley. Eng. N. R. Mar. 3, '27.

Keeping the Road Bed Dry. N. L. Powell. (Paper read before Annual Road Conference.) Can. Engr. Mar. 15, '27.

Les Chaussées Silicatées en Beauce.\* (Silicated Roads in Beauce.) Leroux. Ann. P. et C. Pt. 6, '26.

**d. Maintenance**

Patching Small Openings in Asphalt Paving. Walter E. Rosengarten. (Paper read before Asphalt Pav. Conference.) Eng. & Contr. (Roads & Streets.) Feb., '27.

The Maintenance of Gravel Roads. J. T. Sharpsteen. (Paper read before Univ. of Michigan.) Eng. & Contr. (R. & S.) Mar., '27.

Handling Landslides on Mountain Roads.\* H. J. Spelman. Eng. N. R. Mar. 17, '27.

**e. Street Cleaning, Dust Prevention, Snow Removal**

- Snow Removal Problems of Organization and Operation. Discussion: George E. Hamlin. Am. Soc. C. E. Mar., '27.  
 Snow Removal Problem in Montreal.\* C. J. LeBlanc. Can. Engr. Mar. 15, '27.  
 Cost of Snow Removal in Michigan.\* V. R. Burton. Can. Engr. Mar. 22, '27.

**h. Vehicles, Automobiles, Traffic**

- The Ultimate Highway Development.\* Ben. H. Petty. (Paper read before Am. Road Bldrs. Assoc.) Eng. & Contr. (Roads & Streets) Feb., '27.  
 How Albany Regulates Traffic.\* Eng. & Contr. (R. & S.) Mar., '27.

**E. Bridges, Viaducts, and Arches****a. Timber Bridges and Viaducts**

- Report on Wooden Bridges and Trestles.\* (Am. Ry. Eng. Assoc.) Ry. Age (Daily ed.) Mar. 11, '27.

**b. Iron and Steel Bridges and Viaducts**

- Highway Bridges. Albert E. Kleinert. Bost. Soc. C. E. Feb. '27.  
 Steel Railway Bridges of Large Span.\* Albert D. Ronsse and E. J. F. Derijchere. Int. Ry. Cong. Assoc. Feb., '27.  
 The Carquinez Strait Bridge, San Francisco Bay.\* West. Constr. N. Mar. 10, '27.

**c. Stone Bridges and Viaducts**

- Arch Design Cheaper Than Girder for Road Undercrossing.\* A. G. Hayden. Eng. N. R. Feb. 24, '27.

**d. Concrete and Reinforced Concrete Bridges and Viaducts**

- Analysis of Continuous Concrete Arch Systems.\* Discussion: Hardy Cross. Am. Soc. C. E. Mar., '27.

**f. Suspension Bridges. Transfer Bridges**

- Delaware River Suspension Bridge, U. S. A.\* Engr. Serial beginning Feb. 25, '27.

**g. Swing, Bascule, Lift, Floating, Oscillating Bridges, Traveling Cranes**

- Swing Bridges at Beccles and St. Olave's.\* Engr. Feb. 18, '27.  
 Short-Span Railway Rolling Lift Bascule Bridge.\* Eng. N. R. Feb. 24, '27.

**x. Miscellaneous**

- Recent Bridge Work of the Washington State Highway Department.\* C. E. Andrew. West. Constr. N. Mar. 10, '27.

**F. Inland Waters and Waterways****a. Natural Waterways (General Articles)**

- The Mississippi River Problem.\* R. L. Faris. Mil. Engr. Mar.-Apr., '27.

**b. Canals (General Articles)**

- The Canal Zone of Panama.\* Dock & Harbour Mar., '27.  
 The Chesapeake and Delaware Canal.\* Earl I. Brown. Mil. Engr. Mar.-Apr., '27.

**c. Regulation of Waterways—Volume of Discharge, Freshets, Floods, Soundings**

- The Flood Protection Works of the Miami Valley, Ohio, U. S. A.\* E. W. Lane. Eng. Serial beginning Feb. 25, '27.  
 Conditions and Prospects on the Colorado Delta.\* Eng. N. R. Mar. 17, '27.  
 Kolkverhütung an Wehren.\* (Prevention of Erosion at Dams.) Ludin. Ver. deu. Ing. Jan. 29, '27.  
 Von Abflussmessungen, Pegeln und Pegelbeobachtern.\* (Run-off Measurements, Depth Gages and Depth Gage Observers.) R. Seifert. Z. d. Bauver. Feb. 2, '27.  
 Die Regulierung des Bodensees für Hochwasserschutz, Kraftnutzung und Schifffahrt.\* (Regulation of Lake Constance for Flood Prevention, Power and Navigation.) W. Sattler. Schw. Bauz. Feb. 5, '27.  
 Die Freihaltung des Abflussquerschnitts für Hochwasser und der Speicherbetrieb in Stauhaltungen von Schifffahrtstrassen mit Wasserkraftnutzung.\* (Keeping Run-off Cross Section Open for High Water and Reservoir Operation in Storage Places on Navigable Streams Used for Water Power.) E. Mattern. Z. d. Bauver. Feb. 9, '27.

**f. Supply, Sources of Water, Drains and Reservoirs**

- Protection Against Seepage at Lake Kenogami.\* O. O. Lefebvre. Eng. Inst. Can. Mar., '27.

**g. Consolidation of Banks, Leakage, etc.**

- Clearing a Raft of Drift Timber from Colorado River in Texas.\* Eng. N. R. Mar. 24, '27.

**h. Boats, Barges**

- New Motor Tug for Bluff Harbour, N. Z. John Armstrong. Dock & Harbour Mar., '27.

**j. River and Lake Ports, Equipment**

- The Construction of River Wharves.\* Somers H. Ellis. Dock & Harbour. Serial beginning Mar., '27.  
 The Reconstruction of New Brighton Landing Stage.\* Eng. Mar. 11, '27.



### G. Maritime Works

#### b. Management and Protection of Coasts, Beaches, Dunes

Shore Protection Works Damaged by Heavy Seas.\* Eng. N. R. Mar. 10, '27.

#### c. Vessels and Maritime Navigation, Lighthouses, Buoys, Various Signals

The Double-Ended Ferry Steamer *Imbuhy*.\* Eng. Feb. 11, '27.  
 Signaux Ultra Sonores, Système Langevin, Installés à l'Entrée du Port de Calais pour  
 Guider les Navires.\* (Langevin System of Ultra-Sound Signals Installed at the Entrance  
 to the Port of Calais to Guide Vessels.) Gen. Civ. Feb. 19, '27.

#### d. Roads and Outer Harbors. Dikes and Jetties. Breakwaters

le Calcul des Brise-Lames à Parement Vertical.\* (Calculation of Breakwaters with Vertical  
 Faces.) Jorge Lira. Gen. Civ. Feb. 5, '27.

#### e. Wharves, Mooring Buoys, Harbor Equipment

Recent Improvements at the Port of Copenhagen.\* Dock & Harbour Mar., '27.  
 Navy Yard Pier Supported on Cylinders Having Precast Shells of High Alumina Cement.\*  
 J. J. Manning and W. F. Way. Eng. N. R. Mar. 3, '27.  
 B. & M. Erects Large Coal Handling Facilities at Boston.\* Ry. Age Mar. 12, '27.

#### f. Traction, Haulage, Towing, Mechanical Tractors

The Port of Rangoon.\* Dock & Harbour Mar., '27.

### H. Railroads. Street and Interurban Railways. Automobiles. Aeronautics

#### a. Railroads

##### 1. General Articles

The Trans-African and Trans-Sahara Railways. (*Revue Politique et Parlementaire*.) Int.  
 Ry. Eng. Cong. Feb., '27.  
 Railroad Changes River's Course.\* J. Bernard Walker. Sci. Am. Mar., '27.  
 What the Railways Are Doing to Promote Forest Conservation.\* N. M. Rice. Ry. Age  
 Mar. 5, '27.  
 A New Interoceanic Railway in Central Railway.\* Eng. N. R. Mar. 24, '27.  
 Twentieth-Century Railroad Building.\* Sci. Am. Apr., '27.

##### 2. Location

Report of Economics of Railway Location. (Am. Ry. Eng. Assoc.) Ry. Age (Daily ed.) Mar.  
 10, '27.

##### 3. Roadbed (Grading Construction Work)

Building Concrete Roadbed for the Pere Marquette R. R.\* Eng. N. R. Feb. 24, '27.  
 Relocation Reduces Grades from 6 Per Cent. to 3 Per Cent.\* Eng. N. R. Feb. 24, '27.  
 Mechanical Equipment Speeds Ballast Cleaning on Pennsylvania. Ry. Eng. & Main. Mar., '27.  
 Report of Committee on Ballast. (Am. Ry. Eng. Assoc.) Ry. Age (Daily ed.) Mar. 9, '27.  
 Report of the Committee on Roadway. (Am. Ry. Eng. Assoc.) Ry. Age (Daily ed.) Mar.  
 11, '27.

Drei Beispiele von Rutschungen an Eisenbahndämmen.\* (Three Examples of Slips on  
 Railway Embankments.) Backofen. Z. d. Bauver. Feb. 23, '27.

##### 4. Track

Fighting Snow on a Mountain Railway in Norway.\* R. Lorange. Eng. N. R. Feb. 24, '27.  
 Railroad Tie Specification and Tie Treatment.\* W. F. Goltra. Eng. N. R. Feb. 24, '27.  
 Erie Uses Novel Method Eliminating Grade Crossings.\* Ry. Age (Feb. 26, '27).  
 Report of Special Committee on Highway Crossing Protection.\* (Am. Ry. Eng. Assoc.)  
 Ry. Age (Daily ed.) Mar. 9, '27.  
 Report of the Committee on Ties.\* (Am. Ry. Eng. Assoc.) Ry. Age (Daily ed.) Mar. 9, '27.  
 Report of the Committee on Track.\* (Am. Ry. Eng. Assoc.) Ry. Age (Daily ed.) Mar. 9, '27.  
 Report of Committee on Grade Crossings. (Am. Ry. Eng. Assoc.) Ry. Age (Daily ed.)  
 Mar. 10, '27.

Report of the Committee on Rail. (Am. Ry. Eng. Assoc.) Ry. Age (Daily ed.) Mar. 10, '27.

##### 5. Signals and Safety Apparatus

New York Central Installs Miller Train Stop.\* (*Railway Signaling*.) Int. Ry. Eng. Cong.  
 Feb., '27.  
 Simple Interlocking Eliminates Train Stops in City Streets.\* Leroy Wyant. Ry. Age  
 Feb. 19, '27.  
 Spring Switches Used Extensively on Chicago & North Western.\* J. A. Peabody. Ry. Age  
 Mar. 5, '27.  
 Report of Committee V—Instructions. (Am. Ry. Eng. Assoc.) Ry. Age (Daily ed.) Mar.  
 8, '27.  
 Report of Committee IV—D-C Signaling.\* (Am. Ry. Eng. Assoc.) Ry. Age (Daily ed.)  
 Mar. 8, '27.  
 Report of Committee II—Mechanical Interlocking. (Am. Ry. Eng. Assoc.) Ry. Age (Daily  
 ed.) Mar. 8, '27.  
 Report of Committee VIII—A-C. Automatic Block Signaling. (Am. Ry. Eng. Assoc.)  
 Ry. Age (Daily ed.) Mar. 9, '27.  
 Report of Committee I—Economics of Signaling. (Am. Ry. Eng. Assoc.) Ry. Age (Daily  
 ed.) Mar. 9, '27.  
 Report of Committee III—Power Interlocking. (Am. Ry. Eng. Assoc.) Ry. Age (Daily  
 ed.) Mar. 9, '27.  
 Report of Committee on Signals and Interlocking. (Am. Ry. Eng. Assoc.) Ry. Age (Daily  
 ed.) Mar. 9, '27.

C. & O. Signals Three-Track for Either Direction Operation.\* B. T. Anderson. Ry. Age Mar. 19, '27.

#### 6. Rolling Stock, Fuel

Engineering and Recent Locomotive Developments. W. E. Woodward. West. Ry. Club Dec., '26.

Notes on the Stability of Various Types of Locomotives.\* G. Quaglia. (*Revista dei Trasporti.*) Int. Ry. Eng. Cong. Feb., '27.

First Hudson Type Locomotive.\* Ry. Age Feb. 19, '27.

Report of the Committee on Water Service. (Am. Ry. Eng. Assoc.) Ry. Age (Daily ed.) Mar. 10, '27.

The D. & H. Receives a Second High Pressure Locomotive.\* Ry. Age Mar. 12, '27.

Canadian Pacific's New Locomotives Give Improved Performance.\* Ry. Age Mar. 19, '27.

Note Concernant les Déplacements en Courbe des Bogies par Rapport au Châssis dans le Matériel du Type à Deux Bogies.\* (Note on the Bogie Displacement on Curves in Relation to the Chassi in Two-Bogie Type Rolling Stock.) Birckel. Rev. Gen. Feb., '27.

Voitures Métalliques de 3e Classe à Bogies pour Grandes Lignes Étudiées par l'Office Central d'Etudes de Matériel de Chemins de Fer.\* (Metallic Third Class Bogie Cars for Main Lines, Studied by the Central Office for the Study of Railway Material.) M. J. Vallancien. Rev. Gen. Feb., '27.

Stosswirkungen des ungefederten Gewichtes von Schienenfahrzeugen auf das Geleise.\* A. Furrer. Schw. Bauz. Feb. 12, '27.

#### 7. Use of Electricity

The Stockholm-Göteborg Electrification.\* Ry. Age Mar. 5, '27.

Report of the Committee on Electricity. (Am. Ry. Eng. Assoc.) Ry. Age (Daily ed.) Mar. 9, '27.

The Electrification of the Sydney Metropolitan Railways.\* Eng. Mar. 11, '27.

Maintaining an Overhead Contact System.\* F. W. Bellinger. Ry. Age Mar. 19, '27.

#### 8. Stations, Terminals, Engine Houses, Shops

B. & A. Builds Union Station at Springfield, Mass.\* Ry. Age Feb. 19, '27.

System Classification Plan Improves Yard Efficiency.\* H. R. Fertig. Ry. Age Feb. 19, '27.

Unification of Railway Passenger Terminals.\* E. E. R. Tratman. Eng. N. R. Feb. 24, '27.

Yard Equipped with Car Retarders Classifies 2 000 Cars a Day.\* Ry. Age Feb. 26, '27.

Railways Have Union Pus Terminal.\* Ry. Age Feb. 26, '27.

Report of Committee VI—Designs.\* (Am. Ry. Eng. Assoc.) Ry. Age (Daily ed.) Mar. 8, '27.

Report on Shops and Locomotive Terminals. (Am. Ry. Eng. Assoc.) Ry. Age (Daily ed.) Mar. 9, '27.

Report of the Committee on Yards and Terminals. (Am. Ry. Eng. Assoc.) Ry. Age (Daily ed.) March 11, '27.

Report of the Committee on Buildings. (Am. Ry. Eng. Assoc.) Ry. Age (Daily ed.) Mar. 11, '27.

Chesapeake & Ohio Reorganizes Purchasing and Stores Work.\* Ry. Age Mar. 12, '27.

Freight Station Meets Needs of Growing Southern City.\* Ry. Age Mar. 19, '27.

A Roundhouse as an Artistic Achievement.\* Ry. Age Mar. 26, '27.

#### 9. Technical and Commercial Use

Two Buses Save \$1 350 a Month.\* Ry. Age Feb., '27.

Illinois Central Budgets Transportation Expenses.\* Ry. Age Mar. 5, '27.

Report of Committee VII—Contracts and Valuation. (Am. Ry. Eng. Assoc.) Ry. Age (Daily ed.) Mar. 8, '27.

Report of Committee on Rules and Organization. (Am. Ry. Eng. Assoc.) Ry. Age (Daily ed.) Mar. 10, '27.

#### b. Special Railroads

##### 2. Aerial Railroads (Funicular, Monorail)

Ueber die Anwendungsmöglichkeiten der Seilschwebbahnen für Personenbeförderung. On the Possibilities of Using Cable Suspended Railways for Conveying Passengers.) Robert Hanker. Oest. Ing. Arch. Ver. Feb. 4, '27.

##### 3. Narrow Gauge, Light Railways

Industrial Railways for Factory and Construction Work.\* E. E. R. Tratman. Eng. N. R. Serial beginning Mar. 3, '27.

#### d. Street Railways, Elevated Railways, Subways

##### 1. General Articles

Street Car Subways Proposed for St. Louis Transit System.\* Eng. N. R. Mar. 24, '27.

Le Chemin de Fer Sur Route est une Erreur.\* (The Street Railway is a Mistake.) Ed. Joyant. Ann. P. et C. Pt. 6, '26.

##### 5. Rolling Stock

Experimental Trams for the Metropolitan Electric Tramways.\* Eng. Mar. 4, '27.

#### e. Automobiles

##### 3. Electric Automobiles

Les Chariots de Transport Electriques.\* (Electric Trucks.) V. Neveux. Gén. Civ. Feb. 26, '27.

Wing Flutter in Aeroplanes. Eng. Feb. 11, '27.

#### f. Aeronautics

##### 4. Aerodromes and Landing Fields

The Cardington Airship Shed and Mooring Tower.\* Engr. Serial beginning Mar. 4, '27.

### I. Municipal Water-Works. Agricultural Engineering. Irrigation

#### a. General Articles

Investigations of the Northern End of Lake Okeechobee.\* W. E. Darrow. Am. W. W. Assoc. Feb., '27.

- The Water Works Plant of Butte, Montana.\* Eugene Carroll. Am. W. W. Assoc. Mar., '27.  
 The Buffalo Water Works. George C. Andrews. Am. W. W. Assoc. Mar., '27.  
 The New Water Supply of Wellsville, Ohio.\* R. D. McGill. Eng. & Contr. (W. W.) Mar. '27.  
 The Water Supplies of Quebec Province. T. J. Lafreniere. (Paper read before Can. Section, Am. W. W. Assoc.) Can. Engr. Mar. 8, '27.  
 Transporting a River Over Mountains.\* Edgar Lloyd Hampton. Sci. Am. Apr., '27.

#### b. Hydrology, Water Resources

- Wells as a Source of Water Supply.\* Marcel Pequegnat. Can. Engr. Feb. 22, '27.  
 Water Shortage in Indiana.\* Lewis S. Finch. Am. W. W. Assoc. Mar., '27.  
 La Source Jaillissante Minérale et Thermale des Abatilles, à Arcachon (Gironde). Sa Découverte, Son Aménagement Intérieur.\* (The Gushing Mineral and Thermal Spring of Abatilles, at Arcachon, Gironde. Its Discovery and Its Internal Control.) Louis Le Marie. Gen. Civ. Feb. 5, '27.  
 Ermittlung der Grundwassergeschwindigkeit auf neuer Grundlage. (New Basis for Determining the Ground Water Velocity.) G. J. Lehr. Gesund. Ing. Jan. 1, '27.  
 Die Entwicklung der Hamburger Grundwasserversorgung seit 1910.\* (Evolution of the Hamburg Ground Water Supply Since 1910.) Holthusen. Gas und Wasser. Feb. 5, '27.

#### c. Dams and Reservoirs

- Birmingham Water Supply: Bartley Reservoir.\* Engr. Feb. 18, '27.  
 Water-Proof Masonry Dams. Discussion: Thomas H. Wiggin, Jerome W. Howe, W. H. R. Nimmo, and E. W. Lane. Am. Soc. C. E. Mar., '27.

#### d. Analysis and Purification of Water

- Pretreatment of Boiler Feedwater. Am. W. W. Assoc. Feb., '27.  
 Present Knowledge of Foaming and Priming of Boiler Water with Suggestions for Research. Am. W. W. Assoc. Feb., '27.  
 Municipal Water Supplies and the Effect of Trade Wastes in Relation to the Use of Water in Power-Plant Practice. Am. W. W. Assoc. Feb., '27.  
 The Use of the Dorr Clarifier in Water Treatment.\* John D. Fleming. Am. W. W. Assoc. Feb., '27.  
 The Biological Control of Impounding Reservoirs. Carl Wilson. Am. W. W. Assoc. Feb., '27.  
 Calcium and Magnesium Hydrates as Coagulating Agents.\* Martin E. Flentje. Am. W. W. Assoc. Feb., '27.  
 City Water Supplies in Arkansas. Harrison Hale. Am. W. W. Assoc. Feb., '27.  
 Protection of Ontario Water Supplies. A. E. Berry. Can. Engr. Feb. 22, '27.  
 Super-Chlorination of Chlorophenol Tastes.\* Louis B. Harrison. Am. W. W. Assoc. Mar., '27.  
 The Significance of Nitrogen Determinations in Sanitary Analysis.\* S. L. Neave and A. M. Buswell. Am. W. W. Assoc. Mar., '27.  
 Prevention of Phenol Taste with Ammonia. J. W. McAmis. Am. W. W. Assoc. Mar., '27.  
 A New Water Sterilizing Process.\* Engr. Mar. 4, '27.  
 Trend of Practice in Water Purification. Paul Hansen. (Paper read before Can. Section, Am. W. W. Assoc.) Can. Engr. Mar. 8, '27.  
 Resume of Progress in Chlorination. Norman J. Howard. (Paper read before Can. Section, Am. W. W. Assoc.) Can. Engr. Mar. 8, '27.  
 New Filter Plant at St. Lambert, Que.\* Roger DeL. French. Can. Engr. Mar. 22, '27.  
 Die Hygiene der Wasserversorgung.\* (The Hygiene of Water Supply.) Hermann Koschmieder. Gesund. Ing. Jan. 1, '27.  
 Zur Ausbreitung des Typhus. (The Spread of Typhus.) Max Grünewald. Gas und Wasser. Jan. 29, '27.  
 Die Wasserstoffionenkonzentration, ihr Wesen und ihre Bedeutung. (Hydrogen Ion Concentration, Its Nature and Its Importance.) Thiesing. Gas und Wasser. Feb. 12, '27.  
 Die Trinkwasserverhältnisse Schleswig-Holsteins vom hygienischen Standpunkt. (Potable Water Conditions in Schleswig-Holstein from the Hygienic Viewpoint.) W. Liese. Tech. Gemein. Feb. 20, '27.

#### e. Distribution of Water

- Metering of City Water Supply.\* Seth Van Loan. (Paper read before Engrs. Club.) Engrs. & Eng. Feb., '27.  
 Water Consumption for Various Purposes in Terms of Depth and Area.\* Charles H. Lee. Am. W. W. Assoc. Feb., '27.  
 Municipal Pumping Plants at Ottawa.\* Can. Engr. Feb. 22, '27.  
 Electrically Driven Pumping Stations and Peak Loads. J. A. Rue. Am. W. W. Assoc. Mar., '27.  
 A Large Elevated Storage Tank at Charleston, S. C.\* James E. Gibson. Am. W. W. Assoc. Mar., '27.  
 Underground Waters and Pumping Therefrom. George W. Trauger. Am. W. W. Assoc. Mar., '27.  
 Detecting Water Waste by Surveys.\* A. D. Stalker. (Paper read before Can. Section, Am. W. W. Assoc.) Can. Engr. Mar. 8, '27.  
 Keeping Water Works Office Records.\* C. D. Brown. (Paper read before Can. Section, Am. W. W. Assoc.) Can. Engr. Mar. 8, '27.  
 Determination of Equitable Water Rates.\* J. Clark Keith. (Paper read before Can. Section, Am. W. W. Assoc.) Can. Engr. Mar. 8, '27.  
 Charges for Public Fire Protection.\* R. L. Dobbin. (Paper read before Can. Section, Am. W. W. Assoc.) Can. Engr. Mar. 8, '27.  
 Ottawa Municipal Water Works System.\* W. E. MacDonald. (Paper read before Can. Section, Am. W. W. Assoc.) Can. Engr. Mar. 8, '27.  
 Rio Grande Development Project in New Mexico. R. G. Hosea. Eng. N. R. Mar. 10, '27.  
 La Mesa, Lemon Grove, and Spring Valley Irrigation District, California.\* West. Constr. N. Mar. 10, '27.

- Rigid Specifications and Tests for Cement Concrete Irrigation and Pressure Pipe.\* West. Constr. N. Mar. 10, '27.  
 Dispositif pour la Suppression des Coups de Belier dans les Conduites de Refoulement et les Conduites Forcées.\* (Arrangement for Suppressing Water Hammer in Delivery Pipes and Pressure Pipes.) E. Maynard. Gen. Civ. Feb. 26, '27.  
 Bekämpfung der Korrosion in den Wiesbadener und den Remscheider Wasserleitungen.\* (Fighting Corrosion in the Wiesbaden and Remscheid Water Mains.) Chr. Bücher and Alex Schulte. Gas und Wasser. Serial beginning Feb. 12, '27.

#### f. Drainage of Land

- Erosion and Silting of Dredged Drainage Ditches.\* C. E. Ramser. (Paper read before Iowa Eng. Soc.) Eng. & Contr. Feb., '27.  
 Reclamation of Holland Marsh, Bradford.\* W. H. Day. Can. Engr. Feb. 15, '27.  
 Drainage by Pumping from Wells.\* James C. Marr. (From *Bulletin*, U. S. Dept. of Agriculture.) Eng. & Contr. Mar., '27.

### J. Sewerage. Sewage and Refuse Disposal

#### a. Sewers and Drains

- Soft Ground Tunneling Methods for Small Sewer.\* Eng. N. R. Mar. 24, '27.

#### b. Sewage Disposal, Purification

- Imhoff Tanks—Reasons for Differences in Behavior.\* Harrison P. Eddy. (Paper read before Am. Assoc. Adv. Science & Assoc. Soc.) Engrs. & Eng. Feb., '27.  
 Method of Sewage Treatment Adopted for North Toronto.\* Almon L. Fales. Bost. Soc. C. E. Feb., '27.  
 Sludge Digestion—Reaction and Control.\* Gordon M. Fair and C. L. Carlson. Bost. Soc. C. E. Feb., '27.  
 Sewage Disposal at Denver. Chas. B. Burdick. (Paper read before Ill. Soc. Engrs.) Eng. & Contr. (W. W.) Mar., '27.  
 Grit Chamber Practice.\* A Symposium. Discussion: R. S. Rankin. Am. Soc. C. E. Mar., '27.  
 Burning Gas from Imhoff Tanks at Dekatur, Ill.\* William D. Hatfield. (From paper read before Ill. Soc. Engrs.) Eng. & Contr. (W. W.) Mar., '27.  
 Intercepting Sewers and Sewage Treatment at Springfield, Illinois.\* W. B. Walraven. (Paper read before Ill. Soc. Engrs.) Eng. & Contr. (W. W.) Mar., '27.  
 Sewage Disposal Plant at St. Thomas.\* Warren C. Miller. Can. Engr. Mar. 15, '27.  
 Etat Actuel de la Question de l'Epuración des Eaux Usées.\* (The Present Status of the Question of the Purification of Sewage.) Sentenac and Fontaine. Ann. P. et C. Pt. 6, '26.  
 Neue Fäkalien-Abfuhrwagen.\* (New Wagon for Removing Fecal Matters.) A. Reich. Gesund. Ing. Feb. 5, '27.  
 Ueber die Vorgänge im Schlammfauhraum.\* (On the Processes in the Sludge Chamber.) F. Sierp. Tech. Gemein. Serial beginning Feb. 5, '27.  
 Die Abwassereinigungsanlage der Stadt Höchst a. M.\* (Sewage Purification Plant of the City of Höchst a. M.) Paul Wempe. Tech. Gemein. Feb. 5, '27.

### K. Heat Engines

#### b. Steam Turbines

- Design of High-Pressure Industrial Power-Plants. R. S. Bayntun. Engrs. Soc. W. Pa. Dec., '26.  
 Tendencies in Power Plant Design. Francis Hodgkinson. West. Soc. Engrs. Jan., '27.

#### c. Gas and Oil Engines

- Moteurs Diesel avec Balayage et Alimentation par Turbo-Soufflante à Gaz d'Echappement.\* (Diesel Engines with Scavenging and Feed by Exhaust Gas Turbo-Blowers.) Alfred Buchi. Gen. Civ. Feb. 12, '27.

### L. Electricity

#### a. Production of Electricity

##### 2. Magneto and Dynamo-Electric Machines

- Elektrische Erd und Rohrströme aus Wechselstromanlagen.\* (Electric Ground and Pipe Currents from Alternating Current Plants.) Friedrich Besig. Gas und Wasser. Serial beginning Jan. 15, '27.

#### b. Distribution and Transmission of Electricity

##### 1. Storage Batteries and Cells

- New Circulating Water System at Woolwich Electricity Station.\* Engr. Feb. 11, '27.  
 Civil Engineering Features of the Hell Gate Station.\* Ernest M. Van Norden and George A. Hughes. Am. Soc. C. E. Mar., '27.  
 The Civil Engineering Features of the Kearny Power Station.\* Roman von Fabrice. Am. Soc. C. E. Mar., '27.  
 New East River Station of the New York Edison Co.\* Power Mar. 15, '27.

##### 2. Long-Distance Transmission of Energy

- A New 132 000-Volt Cable Joint.\* Donald M. Simons. A. I. E. E. Mar., '27.  
 Les Réseaux à 220 000 Volts de la Californie. Traversées des Fleuves Sacramento et San Joaquin.\* (The 220 000 Volt Networks of California. Crossing the Sacramento and San Joaquin Rivers.) P. Caufourier. Gen. Civ. Feb. 19, '27.



**c. Electric Lighting****1. Arc, Incandescent, Mercury, Vapor, Neon, Lamps, etc.**

Moderne Lichttechnik und Lichthygiene, sowie rationell-wirtschaftliche Beleuchtung industrieller Betriebsstätten.\* (Modern Light Technique and Light Hygiene, as well as Rational Economic Illumination of Industrial Shops.) Fritz Foerster. Gesund. Ing. Jan. 29, '27.

**2. Uses**

Die Beleuchtung von Arbeitsräumen.\* (The Illumination of Working Places.) Willy A. F. Hatlapa. Gesund. Ing. Jan. 29, '27.

**d. Mechanical Uses of Electricity****2. Servomotors, Hoists, Elevators, Handling Machinery**

How Push-Button Type Elevator Controllers Operate.\* Power Mar. 15, '27.

**f. Signals and Communication**

Measurement of Telegraph Transmission.\* H. Nyquist and Others. A. I. E. E. Mar., '27.

**M. Architecture****a. Educational, Government and Scientific Buildings**

Laboratorium für Hebezeuge und Pumpen der Technischen Hochschule Hannover.\* (Hannover Technische Hochschule Laboratory for Hoisting Apparatus and Pumps.) L. Klein. Ver. deu. Ing. Jan. 29, '27.

Rathaus im Wasserturm.\* (Town Hall in a Water Tower.) Gas und Wasser. Feb. 12, '27.

**b. Business and Commercial Buildings**

Städtisches Miethaus mit zurückgesetzten Obergeschossen in Paris.\* (Municipal Tenement in Paris with Upper Stories Set Back.) Schw. Bauz. Feb. 5, '27.

Einfluss der Reglerstellung auf Reizstärke und Nachhaltdauer.\* (Influence of the Regulator Position on Excitation Intensity and Duration of Resonance.) Ernst Petzold. Z. d. Bauver. Feb. 16, '27.

**c. Residences, Hotels**

Das Modellhaus auf der "Gesolei".\* (The Model House in the "Gesolei".) Heilmann. Gesund. Ing. Jan. 22, '27.

**e. Hospitals and Asylums**

Das neue städtische Altersheim in Stuttgart.\* (The New Municipal Home for the Aged in Stuttgart.) Willy P. Fuchs-Röll. Z. d. Bauver. Feb. 23, '27.

**f. Factories and Mill Buildings**

Building an Industrial Plant in the Saguenay District.\* John L. Guest. Eng. Inst. Can. Mar., '27.

**g. Other Buildings**

Wiederherstellung der Veste Coburg durch Professor Bodo Abhardt 1898-1924.\* (Reconstruction of the Coburg Castle by Professor Bodo Ebhardt, 1898-1924.) Oscar Doering. Zeit. Bau. Pt. 1, '27.

**O. Administration. Legislation. Economics. Statistics****d. Administrative and Financial Management of Means of Communication****5. Railroads and Street Railways**

Public Relations Work, as a Part of Railway Management. Samuel O. Dunn. West. Soc. Engrs. Jan., '27.

Report of Economics of Railway Operation. (Am. Ry. Eng. Assoc.) Ry. Age (Daily ed.) Mar. 10, '27.

Wirtschaftlichkeitsermittlung für Auto- und Bahn-Transport.\* (Determination of Economy in Auto and Railway Transportation.) Daniel Wirth. Schw. Bauz. Feb. 19, '27.

**Q. Surveying and Geodesy**

Circuit Closures in Triangulation.\* Oscar S. Adams. Mil. Engr. Mar.-Apr., '27.

Triangulation for Property Boundaries. Wallace H. Halsey. Mil. Engr. Mar.-Apr., '27.

Field Procedure of Adjusting the Great Circle Line to the Rhumb Line.\* Discussion: N. B. Sweitzer. Am. Soc. C. E. Mar., '27.

Aeroplane Topographic Surveys.\* Discussion: George T. Bergen. Am. Soc. C. E. Mar., '27.

**S. City Planning**

Housing at Dunstable.\* W. F. Wilkins. Inst. Mun. & Co. Engrs. Mar. 1, '27.

Recent Developments in Regional Planning. G. L. Pepler. Inst. Mun. & Co. Eng. Mar. 15, '27.

## Employment Service

The Engineering Societies Employment Service is under the joint management of the National Societies of Civil, Mining, Mechanical, and Electrical Engineers. A Chicago office is maintained in co-operation with the Western Society of Engineers, and a San Francisco office, in co-operation with the Engineers' Club of San Francisco and the California Section of the American Chemical Society. The Service is available only to the several memberships and is maintained by contributions from the Societies and their individual members who are directly benefited.

*Offices.*—Eastern Office, 33 West 39th Street, New York, N. Y., Walter V. Brown, Manager; Chicago Office, 53 West Jackson Boulevard, Room 1736, Chicago, Ill., A. Krauser, Manager; and San Francisco Office, 57 Post Street, Room 715, San Francisco, Calif., Newton D. Cook, Manager.

*Men Available.*—Under this heading, brief announcements will be published without charge. These announcements will not be repeated, except on request received after an interval of one month. Names and records will remain in the active files of the Service for a period of three months, and are renewable on request. Notices for *Proceedings* should be addressed to Employment Service, 33 West 39th Street, New York, N. Y., and should be received prior to the first of the month.

*Opportunities.*—A Bulletin of engineering positions available is published weekly and may be obtained by members of the Societies concerned at a subscription rate of \$3 per quarter, or \$10 per annum, payable in advance. Positions which are not filled promptly as a result of publication in the Bulletin, may be announced herein.

*Voluntary Contributions.*—Members obtaining positions through the medium of this Service are invited to co-operate with the Societies in the financing of the work by nominal contributions made within thirty days after placement, on the basis of \$10 for all positions paying a salary of \$2 000 or less per annum; \$10 plus 1% of all amounts in excess of \$2 000 per annum; temporary positions (of one month or less), 3% of total salary received. The income contributed by the members, together with the finances appropriated by the four Societies named, will be sufficient, it is hoped, not only to maintain but to increase and extend the Service.

*Replies to Announcements.*—Replies to announcements published herein, or in the Bulletin, should be addressed to the key number indicated in each case, with a two-cent stamp attached for re-forwarding, and forwarded to the Employment Service at the address given. Replies received by the Service after the positions to which they refer have been filled, will not be forwarded.

### POSITIONS AVAILABLE

**CIVIL OR MECHANICAL ENGINEER.** about 30, who has had six or seven years' practical experience on highway construction, for service and sales work with bituminous road contractor in South America. Single man, with knowledge of Spanish desirable. Salary, \$300 per month. Apply by letter. X-2265-C.

**PROFESSOR**, of electrical engineering to teach classes in drawing, and other subjects of general engineering nature, and electrical engineering. A man of agreeable personality and initiative, with some experience in teaching and practice is desired. Salary will depend largely on the man. Location, Southern State university. X-2282.

**INSTRUCTOR IN CIVIL ENGINEERING.**

Recent graduate from recognized engineering college with some field experience subsequent or prior to graduation, to teach surveying, highway engineering, railroad engineering, etc. Salary about \$1 500 for nine months. Apply by letter. Location, South. X-2356-C.

**CIVIL ENGINEERING GRADUATES**, preferably those who have taken more than one degree, and who have made special

study of transportation engineering and of sanitary engineering, for staff of Civil Engineering Department in technical school in fall of 1927. Men desired who took their first degree in 1916, or thereabouts, and whose time since graduation has been well divided between teaching and active practice in the profession. Apply by letter giving full details regarding qualifications and requirements. Location, Southwest. X-2370.

**MEN AVAILABLE**

**CITY PLANNING ENGINEER**, Assoc. M. Am. Soc. C. E., now holding executive position, desires change of location. Has spent life in public work, engaged in Europe, Canada, and various parts of United States. Planning, surveys, detail drawings of all branches. Writer and speaker. Highest recommendations. Available on reasonable notice. Location immaterial. A-1521.

**CIVIL ENGINEER**, technical or administrative; M. Am. Soc. C. E.; age 41; available for the summer. Ten years, railway, irrigation, power, and transmission line engineering, construction, and management; twelve years, professor of civil engineering. At present, head of department of large university. California or Pacific Coast preferred. A-1584.

**PROFESSOR OR ASSOCIATE PROFESSOR OF CIVIL ENGINEERING**, M. Am. Soc. C. E. Extensive teaching and practical experience; hydraulics, water supply, sewerage, city planning, also drafting and surveying. Recognized authorship. A-2670.

**MECHANICAL ENGINEER**, M. Am. Soc. C. E., twenty-five years' experience, desires position as research engineer, or director of experimental laboratory of an industrial organization. B-275.

**EXECUTIVE ENGINEER**, Assoc. M. Am. Soc. C. E.; age 40; married; graduate. Experience in design and construction, estimates, surveys, and reports. Ten years, municipal, full charge; five years, Latin America, on roads, pavements, and railroads, maintenance and construction, also building construction. Good organizer. Good knowledge Spanish. Go anywhere. B-955.

**ASSISTANT PROFESSOR OF CIVIL ENGINEERING**, Assoc. M. Am. Soc. C. E.; age 31; married; Harvard A. B.; Mass. Inst. Tech., S. B.; Univ. of Illinois, M. S. Seven years' teaching experience; mechanics; strength of materials; hydraulics; undergraduate and graduate courses in structures, both steel and concrete. Office experience. Permanent position desired. Available June, 1927. Location, preferably New England, or Middle Atlantic States. B-3142.

**ASSISTANT PROFESSOR OF CIVIL ENGINEERING**, Assoc. M. Am. Soc. C. E. Seven years' teaching experience, descriptive geometry, surveying, plane and advanced, mechanics, strength of materials, railways, highways, concrete, structures. Eight years on valuation, in drafting room and department administration, highway, pavement, and bridge construction. Available for teaching position or engineering office. Central States preferred. B-3353-995.

**CIVIL ENGINEER AND CONSTRUCTION SUPERINTENDENT**, M. Am. Soc. C. E. Sixteen years' experience in the construction of dams, tunnels, pipe lines, railroads and roads. Available at once. Location immaterial. B-5135.

**EXECUTIVE ENGINEER**, M. Am. Soc. C. E.; age 54; married; technical graduate. Thirty years' general experience. Good executive; energetic, diplomatic, and forceful. Investigations, estimates, reports. Consultant for organization and management of construction and development operations for banking and investment corporations. Now employed. Highest references. Available now. Location, East or South. B-5666.

**CIVIL ENGINEER**, Assoc. M. Am. Soc. C. E.; age 37; married; Protestant. Trade journal writer, college professor, college graduate, with over twelve years' practical experience in railroads, municipal, ocean terminal, irrigation, cement plant design; seven years as instructor and assistant professor in college instruction; two years as associate editor, trade journal. Available after June. B-5989.

**CIVIL ENGINEER**, Assoc. M. Am. Soc. C. E. Five years' experience, industrial buildings, wants position with contractor or consulting engineer. Location, East or South America. B-6496.

**HIGHWAY ENGINEER**, M. Am. Soc. C. E.; S. B. in Civil Engineering, Mass. Inst. Tech.; post-graduate work in Highway Engineering and Engineering Administration, Mass. Inst. Tech. Fifteen years' experience, primarily highway construction. Experience as executive engineer. Desires new connection, preferably with contractor. Location immaterial. B-6574.

**ENGINEERING SALESMAN**, Assoc. M. Am. Soc. C. E.; age 32; single; graduate civil engineer; with twelve years' experience on construction work, both in office and field, including water power, water filtration, sewage disposal, and industrial plants, invites proposition on selling construction equipment or materials. Location, preferably East, or West Coast, or foreign country. B-6886.

**CHIEF OF PARTY**, Jun. Am. Soc. C. E.; age 23; single. Fifteen months, hydrographic and topographic surveying. Last thirteen months as chief of party on construction work and railroad grade crossing elimination, including designing and estimating. Available immediately. Location, New York City. C-13.

**CONSTRUCTION ENGINEER**, Assoc. M. Am. Soc. C. E.; age 46; married. Active construction engineer with twenty years' experience in heavy concrete, tunnels, dams,

earthwork, and underground layouts, wants responsible position with contractor or private business concern. Available at once. Location anywhere. C-239.

ASSOCIATE MEMBER, Am. Soc. C. E.; graduate in civil engineering; age 37; married. Fourteen years' broad experience, all phases railroad engineering; surveys, construction, office work, including concrete design, estimates, field investigations and reports, bridges, buildings, signals, valuation, cost, and maintenance. Desires position as assistant engineer or similar responsible work. C-365.

EXECUTIVE ENGINEER, M. Am. Soc. C. E.; superintendent construction, engineering reports, etc.; age 50; married; technical graduate. Experience in Scotland, England, United States, Canada, Mexico, Peru, Chile, Argentine, Uruguay. Docks, railway, water-works, harbor, bridge, canal, steel plant, power plants (steam and hydro-electric), general construction. Speaks, writes, Spanish. Location preferred, British Dominions, Spanish-speaking country. C-496.

GRADUATE CIVIL-HYDRAULIC ENGINEER, M. Am. Soc. C. E.; age 43. Examinations, reports, estimates, income tax schedules, valuations, reserve estimates, surveys, maps, plans, specifications, contracts, and supervision of construction, and litigation engineering investigations for different clients. C-535.

RESIDENT ENGINEER OR SUPERINTENDENT OF CONSTRUCTION, M. Am. Soc. C. E.; graduate, University of Michigan; age 48. General construction, foundations, bridges, steel and concrete, sewers, dams, power plants, wharves, structural steel; seven years contracting in own name and own financing. Go anywhere in United States or Canada. C-2169.

CONSTRUCTION ENGINEER, M. Am. Soc. C. E.; age 48; married. Twenty-five years' experience, railroads, bridges (steel and concrete), tunnels (open-cut and driven), sewers (all types—sanitary and storm water), pumping stations for same, dams (earth and concrete), viaducts (steel and concrete), highways (roads and street paving), wharves, docks, and piers, foundations, estimating and specifications. Available immediately. Location, East. C-2643.

CIVIL ENGINEER, Jun. Am. Soc. C. E.; graduate, University of Cincinnati, with C. E. degree; age 30; married. Eight years' varied experience in railroad maintenance, lock and dam construction, and highways. Location anywhere. Now available. C-2650.

STRUCTURAL ENGINEER, Assoc. M. Am. Soc. C. E. Ten years' experience in reinforced concrete design and structural steel. Conversant with latest practice and up to date in economical design. Specialty, commercial buildings, schools, etc.; also familiar with coal-handling and conveying machinery layouts and equipment. Location preferred, Middle West, but will consider others. C-2701.

CIVIL ENGINEER, Assoc. M. Am. Soc. C. E.; M. Am. C. I.; age 38; married. Twenty years' diversified experience on construction and design; eight years, railroad location and construction; four years, military engineering; two years, bridge design; two years, town planning and execution; remainder on water supply, drainage and sewerage, and highway design and construction. At present in New Zealand. Location anywhere, but preferably Australasia. Has knowledge of Hindustani, French, and Russian. C-2762.

GRADUATING CIVIL ENGINEER, age 22; married; desires work that will lead to, or is in designing steel structures of reinforced concrete. Will go anywhere. Is experienced in the building trade. C-2789.



## Membership

(From March 2 to April 5, 1927)

### Additions

	Date of Membership.
ALLEN, Charles Cecil. Transitman, S. P. Co., 715 Leavenworth St., San Francisco, Calif.	Assoc. M. Mar. 14, 1927
ANDERSON, Norval Eugene. Asst. Engr., The San. Dist. of Chicago (Res., 7030 Paxton Ave.), Chicago, Ill.	Assoc. M. Mar. 14, 1927
APPLE, Charles Henry. Dist. Engr., State Div. of Highways, Colson-Greathouse Bldg., Paris, Ill.	M. Mar. 14, 1927
BACK, Nicholas Valentine. Mixer Insp., State Dept. of Highways (Res., 1728 North 3d St.), Philadelphia, Pa.	Jun. Mar. 14, 1927
BALDRY, William Earnest. City Engr. (Res., 1206 West 13th St.), Topeka, Kans.	Assoc. M. May 15, 1917 M. Dec. 3, 1926
BARNEY, William Joshua. Pres., Barney-Ahlers Constr. Corporation, 110 West 40th St., New York, N. Y.	Jun. April 5, 1910 Assoc. M. Oct. 29, 1912 M. Mar. 14, 1927
BEAM, Henry Jordan. Sales Engr., The Alvey-Ferguson Co., 536 Book Bldg., Detroit, Mich.	Jun. Dec. 4, 1922 Assoc. M. Jan. 17, 1927
BEARD, Vivian Dangerfield. Designing Engr., Am. Bridge Co. (Res., 71 Sixteenth St.), Ambridge, Pa.	M. Mar. 14, 1927
BEATTIE, Kenneth William. 55 Hanson Pl., Box 828, Brooklyn, N. Y.	Jun. Mar. 14, 1927
BEERMANN, Paul. Care, J. Beermann, 3601 Grim Ave., San Diego, Calif.	Jun. Mar. 14, 1927
BEERS, Leslie Carl. Chf. Draftsman and Engr., Met. Eng. & Constr. Co., Detroit (Res., 310 Wordsworth Ave., Ferndale), Mich.	Jun. Mar. 14, 1927
BELMONT, Franklyn Edward. Engr., Empire Bond & Mortgage Corporation, 17 East 42d St. (Res., 1380 Merriam Ave.), New York, N. Y.	Assoc. M. Oct. 3, 1918 M. Mar. 14, 1927
BENNET, Harold Housley. Structural Engr., 5084 Tennyson St., Denver, Colo.	Jun. Feb. 25, 1924 Assoc. M. Mar. 14, 1927
BINDER, Reuben Willis. Engr., McClintic-Marshall Co. of California (Res., 112 South Berendo St.), Los Angeles, Calif.	Assoc. M. Mar. 14, 1927
BLACK, Robert Clyde. City Engr., City Hall, Beaumont, Tex.	Assoc. M. Mar. 14, 1927
BLOOD, Charles Reader. Asst. Engr., City of Sacramento (Res., 1325 H St.), Sacramento, Calif.	Assoc. M. Mar. 14, 1927
BOSSY, Reginald Arthur. Crystal City, Tex.	Jun. Nov. 15, 1926
BOWMAN, Harry Lake. Prof., Civ. Eng., in Chg. of Dept., Drexel Inst., Philadelphia Pa.	Assoc. M. Mar. 12, 1923 M. Mar. 14, 1927
BROEREN, John N. 26 Tacoma Ave., Youngstown, Ohio.	Jun. Mar. 14, 1927
BRONSON, Joseph Chandler. Res. Engr., Carl B. Harrop, 310 West Broad St., Columbus, Ohio.	Jun. Mar. 14, 1927
BROWN, Burtis Scott. Cons. Engr., 65 Franklin St., Boston, Mass.	Assoc. M. Oct. 5, 1909 M. Mar. 14, 1927
BRYAN, George, Jr. Contr. Mgr., Am. Bridge Co., 203 Wolvin Bldg., Duluth, Minn.	M. Jan. 17, 1927
BUCK, Raymond Frederick. Vice-Pres., Union Paying Co., Philadelphia (Res., 321 North Swarthmore Ave., Swarthmore), Pa.	Assoc. M. Jan. 17, 1927
BUCKMAN, Henry Holland. Cons. Engr., The Hlanda Corporation; Pres., The Buckman Corporation (Res., 130 Copeland St.), Jacksonville, Fla.	M. Mar. 14, 1927
CARMICHAEL, James Troy. City Engr., City Hall, Helena, Mont.	Assoc. M. June 6, 1921 M. Mar. 14, 1927
CARTER, Harold Samuel. Prof., Civ. Eng., and Head of Dept., South Dakota State Coll. (Res., 807 Eighth St.), Brookings, S. Dak.	Jun. Jan. 14, 1924 Assoc. M. Mar. 14, 1927
CHAPPELL, Frank Wilson. Designing Engr., R. J. Dewees Co., 615 Slaughter Bldg., Dallas, Tex.	Assoc. M. Nov. 27, 1917 M. Mar. 14, 1927
CLAUSEN, Arnold Alvin. Designing Draftsman, C. R. I. & P. Ry., Room 803, La Salle St. Station, Chicago, Ill.	Assoc. M. Mar. 14, 1927
CLEVER, William. Engr., R. W. Nickerson, 136 Liberty St., Room 610, New York (Res., 107-22 One Hundred and Twelfth St., Richmond Hill), N. Y.	Jun. July 9, 1923 Assoc. M. Aug. 30, 1926
CONNINGTON, Charles Simpson. Engr., H. & S. Sonn, Inc., Sunny Ridge, Harrison (Res., 488 Murray St., Pelham Manor), N. Y.	Jun. Mar. 14, 1927
CONRAD, John Joseph. With N. Y. C. R. R., New York (Res., 640 Van Cortlandt Park Ave., Yonkers), N. Y.	Assoc. M. Mar. 14, 1927
COOK, John Orth. Draftsman, Dept. of Public Works, Allegheny County (Res., 344 Freeland St.), Pittsburgh, Pa.	Assoc. M. Mar. 14, 1927
CORNELL, George Milton. Draftsman, Bridge Dept., N. P. Ry., St. Paul (Res., 2525 Colfax Ave., South Minneapolis), Minn.	Jun. Mar. 14, 1927
CRITCHLOW, Howard Thompson. Chf., Div. of Waters, Dept. of Conservation and Development, State Office Bldg., Trenton, N. J.	Jun. Jan. 2, 1912 Assoc. M. Dec. 2, 1914 M. Mar. 14, 1927

MEMBERS—(Continued)		Date of Membership.	
CUMBUS, George Warren, Jr.	3408 Eleventh Ave., N., Birmingham, Ala.	Jun.	Oct. 1, 1926
DARLING, James Arthur.	Draftsman, The Port of New York Authority, 75 West St., New York, N. Y. (Res., 173 Vassar Ave., Newark, N. J.)	Jun.	Mar. 14, 1927
DERBY, Ray Lyle.	San. Engr., Salisbury, Bradshaw & Taylor, 743 Petroleum Securities Bldg. (Res., 937 South Curson Ave.), Los Angeles, Calif.	Assoc. M.	Mar. 14, 1927
DONOVAN, Greensbury William, Jr.	Structural Detailer, Baldwin Locomotive Works, 15th and Spring Garden Sts. (Res., 6209 Marsden St.), Philadelphia, Pa.	Jun.	Mar. 14, 1927
EAVES, Elsie.	Asst. on Market Research, <i>Engineering News-Record</i> , 10th Ave. at 36th St., New York, N. Y.	Assoc. M.	Mar. 14, 1927
EVERETT, Frederic Elwin.	Commr. and Chf. Engr., State Highway Dept., State House (Res., 56 Beacon St.), Concord, N. H.	Assoc. M.	Dec. 6, 1915
		M.	Mar. 14, 1927
FENN, Nathan Frederick, Jr.	Asst. Engr., Arlington County Water Supply System (Res., 1229 Massachusetts Ave., N. W.), Washington, D. C.	Jun.	Mar. 14, 1927
FINNERTY, Raymond Gerard.	427 Nostrand Ave., Brooklyn, N. Y.	Assoc. M.	Mar. 14, 1927
FISHER, Herbert Phillips.	Hotel Northland, Green Bay, Wis.	Jun.	Mar. 14, 1927
FOWLER, Warren Glenn.	Bridge Engr., Board of Park Commrs., Care, City Engr., St. Joseph, Mo.	Jun.	Dec. 4, 1922
		Assoc. M.	Mar. 14, 1927
FRIEDMAN, Edmund.	Engr., Coral Gables Corporation; City Engr., City Hall, Coral Gables, Fla.	Assoc. M.	Mar. 14, 1927
FRINCKE, Milton Hotopp.	Engr. and Supt. of Constr., McClintic-Marshall Co. of California, 605 Delta Bldg. (Res., 2638 Buckingham Rd.), Los Angeles, Calif.	Jun.	Nov. 26, 1923
		Assoc. M.	Mar. 14, 1927
GENTZLINGER, Henry Werner.	Engr., The Texas Co., 17 Battery Pl. (Res., 834 West End Ave.), New York, N. Y.	Jun.	Mar. 14, 1927
GLASSMAN, Morris.	With Kelker, De Leuw & Co., 111 West Washington St. (Res., 728 South Western Ave.), Chicago, Ill.	Jun.	Mar. 14, 1927
GOODKIND, Morris.	Bridge Engr., State Highway Comm., Trenton (Res., 32 Hardenbergh St., New Brunswick), N. J.	Assoc. M.	Jan. 13, 1919
		M.	Mar. 14, 1927
GRAY, William Jesse.	Asst. City Engr., Box 131, Port Arthur, Tex.	Assoc. M.	Mar. 14, 1927
GUERIN, Frederick Harrison.	With Clyde Potts, 30 Church St., New York, N. Y. (Res., 15 Olyphant Park, Morristown, N. J.)	Assoc. M.	Mar. 14, 1927
HANF, Porter Valentine.	Office Engr. and Draftsman, Southern Sierras Power Co., 473 Third St., San Bernardino, Calif.	Assoc. M.	Mar. 14, 1927
HARDAWAY, Robert Early, Jr.	Supt., Hardaway Contr. Co., Alhambra, N. C.	M.	Mar. 14, 1927
HARMAN, Samuel Thomas Sarsfield.	Asst. Dist. Engr., Northern Dist., Great Southern Rys., Dist Engr.'s Office, Broadstone, Dublin, Ireland.	Jun.	Aug. 30, 1926
HARPER, Walter Nichols.	Junior Engr., U. S. Engr. Dept. 1st Dist., 39 Whitehall St., Room 713, New York, N. Y.	Assoc. M.	Mar. 14, 1927
HOLMES, Henry McCall, Jr.	Care, U. S. Hydrographic Surv., U. S. S. <i>Hannibal</i> , Care, Postmaster, New York, N. Y.	June.	Nov. 15, 1926
HUTCHINSON, Robert Paddock.	877 Dexter Horton Bldg., Seattle, Wash.	Jun.	Mar. 14, 1927
JAMESON, William Howe.	Estimator, Eng. Dept., McClintic-Marshall Co. (Res., 42 Waldorf St., Observatory Station), Pittsburgh, Pa.	Jun.	Mar. 14, 1927
KEARNS, Norman Henry.	Asst. Supt., Constr., Chile Exploration Co., Chuquicamata, Chile.	Jun.	May 28, 1923
		Assoc. M.	Jan. 17, 1927
KEEFER, Clarence Edward.	Prin. Asst. to Sewerage Engr., Bureau of Sewers (Res., 1720 Bolton St.), Baltimore, Md.	Jun.	June 1, 1920
		Assoc. M.	Oct. 2, 1922
		M.	Mar. 14, 1927
KEPNER, Dana Ewart.	San. Engr., State Board of Health, 420 State Office Bldg., Denver, Colo.	Assoc. M.	Mar. 14, 1927
KLINE, Zoltan.	Cons. Engr., 415 Lexington Ave., New York, N. Y.	Assoc. M.	Mar. 14, 1927
KNOX, Harold Waterman.	Engr., P. T. Cox Contr. Co., Inc., 154 Nassau St., New York, N. Y. (Res., 75 Pochassie St., Westfield, Mass.)	Jun.	Dec. 4, 1922
		Assoc. M.	Mar. 14, 1927
KOWALCHIK, Stephen Alexis.	Box 154, Linesville, Pa.	Jun.	Nov. 15, 1926
LAMSON, John Lester.	Care, U. S. Geological Survey, Territorial Office Bldg., Honolulu, Hawaii.	Assoc. M.	Oct. 1, 1926
LEHNERT, Diedrich Frederick.	1727 East 23d St., Brooklyn, N. Y.	Jun.	Mar. 14, 1927
LENEX, Jacob Leon.	Asst. Engr., Alexander Potter, 50 Church St., New York (Res., 2075 Seventy-ninth St., Brooklyn), N. Y.	Jun.	Jan. 17, 1921
		Assoc. M.	Mar. 14, 1927
LI, Richard Szu Mien.	Care, Fairchild Aerial Surveys, 270 West 38th St., New York, N. Y.	Jun.	Oct. 1, 1926
LINDSAY, John.	3337 Arch St., Philadelphia, Pa.	Jun.	Mar. 14, 1927

May, 1927.]

## MEMBERSHIP—ADDITIONS

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ship.

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## MEMBERS—(Continued)

Date of  
Membership.

LIPPMAN, Meyer Alvin. Engr., Kyrock Corporation of New York, New York (Res., 403 Logan St., Brooklyn), N. Y.....	Assoc. M.	Mar. 14, 1927
LONGACRE, Leonard Lyle. Senior Draftsman, Southern California Edison Co., Box 24, Big Creek, Calif.....	Assoc. M.	Mar. 14, 1927
LUCAS, William Jennings. Draftsman, Los Angeles County Surv., 401 Hall of Records, Los Angeles, Calif.....	Jun.	Mar. 14, 1927
MACBEAN, Donald Grant. Care, The California Oregon Power Co., Medford, Ore.....	Jun.	Mar. 14, 1927
MACKIE, Thaddeus Hinshaw. Bridge Dept., State Highway Comm., Raleigh, N. C.....	Jun.	Oct. 1, 1926
MACQUEEN, Philip Outerbridge. Associate Engr., War Dept., U. S. Engr. Office (Res., 1657 Thirty-first St. N. W.), Washington, D. C.....	Assoc. M.	Nov. 27, 1917
McKEAN, Alexander Matthews, Jr. Chf. Engr., Pan-American Petroleum Corporation and Mexican Petroleum Corporation, 120 Broadway, New York (Res., 172 Twenty-third St., Jackson Heights), N. Y.....	Jun.	April 18, 1916
McTAGGART, Clifford Arthur. Asst. Mgr., Highway Bureau, Armco Culvert Assoc. (Res., 116 South Main St.), Middletown, Ohio..	Assoc. M.	Aug. 30, 1926
MAGGI, Agustín. Juan Paullier 1168, Montevideo, Uruguay.....	Assoc. M.	Aug. 30, 1926
MARSH, Francis Beal. Deputy Chf. Engr., Water Supply Board (Res., 66 Woodbury St.), Providence, R. I.....	M.	Mar. 14, 1927
MARSHALL, Harry Leslie. 1105 Fairview Ave., N. Seattle, Wash.	Jun.	Oct. 1, 1926
MATHEWSON, John. Instrumentman, Carter & Damerow, Box 895, Vero Beach, Fla.....	Jun.	Mar. 14, 1927
MAYER, Louis Carl. 917 C. C. Chapman Bldg., Los Angeles, Calif.	Assoc. M.	Mar. 14, 1927
MAYNARD, Clarence Francis. Chf. of Computing Div., U. S. Coast and Geodetic Survey, Manila, Philippine Islands.....	Assoc. M.	July 6, 1920
MINTER, Richard Gideon. Box 239, Griffin, Ga.....	M.	Jan. 17, 1927
MORRISON, Walter Gordon. Computer, Southern California Edison Co., Big Creek, Calif.....	Jun.	Oct. 1, 1926
NEWMAN, James Blaine. With Buchman & Kahn, 49 West 45th St., New York (Res., 883 Franklin Ave., Apartment 5 D, Brooklyn), N. Y.....	Jun.	Mar. 14, 1927
NICHOL, Frank Elliott. Instr., Coll. of Eng., Univ. of Minnesota (Res., 312 Walnut St., S. E.), Minneapolis, Minn.....	Assoc. M.	April 3, 1922
PALMER, Harold King. Designer, Los Angeles County Sanitation Dists., 202 Law Bldg., Los Angeles, Calif.....	M.	Mar. 14, 1927
PATTERSON, Joseph Robert. Care, Macdonald Eng. Co., Box 35, Conshohocken, Pa.....	Jun.	Nov. 15, 1926
PAUL, Ellis Ellsworth. With Harrington, Howard & Ash (Res., 2028 East 71st St.), Kansas City, Mo.....	Assoc. M.	Mar. 14, 1927
PAULSEN, Carl Gustav. Dist. Engr., U. S. Geological Survey, Federal Bldg. Boise, Idaho.....	Assoc. M.	May 13, 1918
PECKWORTH, Howard Faron. Engr., Fred L. Cranford-Chas. H. Locher, Inc. (Res., The Princeton Club, Park Ave. and 39th St.), New York, N. Y.....	M.	Mar. 14, 1927
PENN, Henry. Asst. Prof., Civ. Eng., Armour Inst. of Tech. (Res., 10359 South Lowe Ave.), Chicago, Ill.....	Jun.	Mar. 14, 1927
PETERSON, Walter Edward. Guild Hall, Solvay, N. Y.....	M.	Mar. 14, 1927
POLLARD, Lawrence Welford. Aiken, S. C.....	Jun.	Nov. 15, 1926
PORTER, Carroll Benjamin. Field Draftsman on Constr., C. & O. Ry., 202 Pike St., Covington, Ky.....	Assoc. M.	Nov. 15, 1926
PORTER, Marcus Alley. Central Y. M. C. A., Rochester, N. Y.....	Jun.	Mar. 14, 1927
POWERS, Ellwood Dennis. Newark Representative and Treas., E. S. Powers & Son, Inc., Chamber of Commerce Bldg. Newark, N. J.....	Jun.	Dec. 3, 1926
PRICE, Wright Moore. Bridge Dept., State Highway Comm., Raleigh, N. C.....	Assoc. M.	Mar. 14, 1927
PRIOR, Joseph William. Chf. Engr., Joseph De Vore Co., 4041 Waveland Ave., Chicago, Ill.....	Jun.	Oct. 1, 1926
RADCLIFFE, Donald Verne. Surv., City of Long Beach (Res., 1516 East 16th St.), Long Beach, Calif.....	Jun.	Mar. 14, 1927
RICH, George Rollo. Hydr. Designer, Stone & Webster, Inc., 147 Milk St., Boston, Mass.....	Jun.	Mar. 7, 1921
RICHARDS, Albert Zabriskie. (Caldwell & Richards), 407 Templeton Bldg., Salt Lake City, Utah.....	Assoc. M.	Mar. 14, 1927
RIVIERE, James Andrew. Kelly Field, San Antonio, Tex.....	M.	Mar. 14, 1927
ROBBINS, Chester Flager. Associated with C. W. Petit, Box 902, Ventura, Calif.....	Jun.	Oct. 1, 1926
ROBINSON, Ralph Bert. Care, Cia. Minera Rio Blanca, Casilla 1857, Santiago, Chile.....	Assoc. M.	Mar. 14, 1927
ROSENBERG, Samuel. Res. Engr., Westchester County Park Comm., Bronxville (Res., 311 Sixth Ave., North Pelham), N. Y.	Jun.	Dec. 3, 1926
ROUNER, Thomas Jefferson. With U. S. Engr. Corps, Room 40, Municipal Bldg., Chattanooga, Tenn.....	Assoc. M.	Mar. 14, 1927
RUSSELL, Lewis Walter. Supt., Bates & Rogers Constr. Co., 715 Old Colony Bldg., Chicago, Ill.....	Jun.	Jan. 17, 1927
	Assoc. M.	Mar. 14, 1927

			Date of Membership.
MEMBERS—(Continued)			
SABATO, Ciccio. Civ. Engr., 701 Pershing Sq. Bldg., Los Angeles, Calif.	Assoc. M.	Nov. 15, 1926	
SCHEETZ, Harry Lang. Engr. and Estimator, The Barnes Constr. Co., 1828 Arch St. (Res., 1621 Dyre St.), Philadelphia, Pa.	Jun.	Mar. 14, 1927	
SCHWEDLER, William Max. Junior Engr., Port Comm. (Res., 1201 Gray Ave.), Houston, Tex.	Jun.	Mar. 14, 1927	
SEGOE, Ladislav Walter. Engr. and Secy., City Planning Comm., City Hall, Cincinnati, Ohio.	Assoc. M.	Dec. 3, 1926	
SHULMAN, Morris Julius. Structural Draftsman, Board of Transportation (Res., 2017 Hughes Ave.), New York, N. Y.	Jun.	Mar. 14, 1927	
SINGLETON, Charles Clayton. Structural Draftsman, Bethlehem Steel Co., Sparrows Point (Res., 2203 Poplar Grove St., Baltimore), Md.	Jun.	Mar. 14, 1927	
SLATTERY, Fremont W. Drainage Engr., Imperial Irrig. Dist., Box 553, Imperial, Calif.	Assoc. M.	Dec. 15, 1924	
SLEDGE, Lamar Cobb. Care, Land Dept., Georgia Power Co., Atlanta, Ga.	M.	Mar. 14, 1927	
SMITH, Leonard Budd. Field Engr., Goold T. Butler, Box 1071, St. Augustine, Fla.	Jun.	Oct. 1, 1926	
SMITH, Lewis Bruton. Vice-Pres., Hevenor & Weller, Inc. (Res., 32 Raeburn Ave.), Rochester, N. Y.	Assoc. M.	Mar. 14, 1927	
SMITH, Rockwell. 1528 Ry. Exchange Bldg., St. Louis, Mo.	Jun.	Oct. 1, 1926	
SNELL, Rutherford. Office Engr., Valuation Dept., C. & O. Ry., 1403 Laburnum Ave., Richmond, Va.	Assoc. M.	Mar. 14, 1927	
SOROKA, Mary Olga. 793 Eighth Ave., Astoria, N. Y.	Jun.	Mar. 14, 1927	
SPROTT, Howard Judson. Box 73, Holden, Mass.	Jun.	Jan. 17, 1927	
STARLING, Charles Houston, Jr. 407 Adams St., Decatur, Ga.	Jun.	Oct. 1, 1926	
STREIFF, Abraham. Cons. Engr., Bangor Hydro-Elec. Co., 115 East South St., Jackson, Mich.	Assoc. M.	Mar. 16, 1925	
STROMSTED, Finn. Structural Detailer and Concrete Designer, Bethlehem Steel Co., 129 North 8th St., Allentown, Pa.	M.	Jan. 17, 1927	
TAKAHASHI, Suejiro. 86 Kagomachi Koishikawa, Tokyo, Japan.	Jun.	Mar. 14, 1927	
TAYLOR, Harvey Birchard. Pres., Cramp-Morris Industrials, Inc., Richmond and Norris Sts., Philadelphia, Pa.	Assoc. M.	Mar. 14, 1927	
TEAS, Howard Jones. Field Engr., Portland Cement Assoc., Box 71, Malverne, N. Y.	M.	Mar. 14, 1927	
TOPPER, Raymond Smith. Sales and Constr. Engr. (Topper & Griggs), 641 Albany Ave. (Res., 84 Vine St.), Hartford, Conn.	Assoc. M.	Nov. 15, 1926	
TRUE, Daniel Maurice. Office Engr., Eng. Dept., City of Los Angeles (Res., 1323 North Kenmore Ave.), Los Angeles, Calif.	Assoc. M.	Mar. 14, 1927	
UPP, Philip Alfred. Bridge Draftsman and Designer, State Highway Dept. (Res., 313 West Allegan St.), Lansing, Mich.	M.	Mar. 14, 1927	
VAN ANTWERP, Eugene Ignatius. Care, Goldman & Ullian, 2522 First National Bank Bldg., Detroit, Mich.	Jun.	Mar. 14, 1927	
VEITCH, Albert Hertzner. Practice Engr., Industrial Eng. Dept., Jones & Laughlin Steel Corporation (Res., 319 Klehl St.), Woodlawn, Pa.	Assoc. M.	Mar. 14, 1927	
VOLKMAR, Karl. Rodman, P. R. R. (Res., 523 Hawthorne Ave.), Williamsport, Pa.	Jun.	Jan. 17, 1927	
WAGNER, Edwin Brown. Res. Engr., Borough of Downingtown (Res., 138 Pennsylvania Ave.) Downingtown, Pa.	Jun.	Mar. 14, 1927	
WALLBILLICH, Stephen Joseph. Waynesboro, Miss.	Assoc. M.	Oct. 1, 1926	
WARD, Robert Lincoln Elwyn. With Eng. Dept., City of Los Angeles (Res., 5943 Fifth Ave.), Los Angeles, Calif.	Assoc. M.	Mar. 14, 1927	
WEIGHTMAN, Harry. Senior Asst. Engr., Nigerian Rys., Care, Chf. Engr., Nigerian Rys., Ebute Metta, Nigeria, West Africa.	Assoc. M.	Nov. 15, 1926	
WEINRIB, Jacob Jay. Supt. of Constr., Weinreb Realty Corporation, 12104 Liberty Ave. (Res., 10712 One Hundred and Sixteenth St.), Richmond Hill, N. Y.	Jun.	Mar. 14, 1927	
WELLER, Frank Helvenston. Sylva, N. C.	Assoc. M.	Nov. 15, 1926	
WESTERGAARD, Harald Malcolm. Associate Prof., Theoretical and Applied Mechanics, Univ. of Illinois (Res., 806 South Lincoln Ave.), Urbana, Ill.	Assoc. M.	June 19, 1922	
WHEELER, Earl Charles. With Fay, Spofford & Thorndike (Res., 1185 Boylston St.), Boston, Mass.	M.	Mar. 14, 1927	
WHITNEY, Gilbert Clinton. Signal Engr., State Transit Comm., 270 Madison Ave., New York, N. Y.	Jun.	Jan. 17, 1927	
WILLIAMS, Frederick. Civ. Engr. and Surv., 336 Main St., East Orange, N. J.	Assoc. M.	June 24, 1914	
WINTER, Harry Sloan. Draftsman, State Road Comm. (Res., 306 Delaware Ave.), Charleston, W. Va.	M.	Mar. 14, 1927	
WOOD, Walter Jordan. Draftsman, H. L. Haehl, Box 1384, Stanford University, Calif.	Jun.	Oct. 29, 1912	
YOUNG, Clarence Richard. Prof. Structural Engr., Univ. of Toronto, 98 Hilton Ave., Toronto 10, Ont., Canada.	Assoc. M.	Sept. 12, 1916	
	M.	Jan. 17, 1927	
		Mar. 14, 1927	



## MEMBERS—(Continued)

Date of  
Membership.

YOUNG, William Nelson. Sales Engr., Albert Oliver & Son, Inc., New York (Res., 6 Montague Terrace, Brooklyn), N. Y.....	Jun.	Nov. 15, 1926
ZASS, William Walter. Constr. Engr., State Highway Dept., Little Rock, Ark.....	Assoc. M.	Jan. 17, 1921
ZEIGLER, William Leroy. Chf. Civ. Engr., The São Paulo Tram- way, Light & Power Co., Ltd., Caixa Postal 2428, São Paulo, Brazil.....	M.	Jan. 17, 1927

## Reinstatements

## ASSOCIATE MEMBERS

Date of  
Reinstatement.

AKERS, James Clark.....	Mar. 29, 1927
BLACKMORE, George Glover.....	Mar. 29, 1927
BONNER, John Pollock.....	Mar. 29, 1927
LANE, John Harold.....	Mar. 29, 1927
SEGURA, Valeriano.....	Mar. 29, 1927

## Resignations

## MEMBERS

Date of  
Resignation

REDFIELD, Charles Montieth.....	Mar. 29, 1927
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## ASSOCIATE MEMBERS

HUNTZICKER, Paul.....	Mar. 29, 1927
SHIMER, Harry Woodworth.....	Mar. 29, 1927

## JUNIORS

RHEINGANS, William Jacob.....	Mar. 29, 1927
VAN DER NOORDAA, Johan Taco.....	Mar. 29, 1927
VAUPEL, John Leyson.....	Mar. 29, 1927

## Deaths

GOING, Alvah Seymour. Elected Associate Member, May 4, 1892; Member, June 7, 1899; died March 21, 1927.	
HAMMATT, Edward Augustus White. Elected Member, June 5, 1901; died March 18, 1927.	
HARPER, Henry Garner. Elected Associate Member October 11, 1920; died March 24, 1927.	
HUBBARD, Frank James. Elected Member, April 12, 1926; died February 23, 1927.	
MCLEOD, Donald Fraser. Elected Associate Member, April 30, 1912; Member, March 8, 1921; died March 16, 1927.	
MATHER, Thomas Hoggan. Elected Member, October 1, 1902; died March 23, 1927.	
SNELL, Joseph Emmett. Elected Associate Member, April 5, 1910; died March 21, 1927.	
THOMPSON, Clarence Hard. Elected Associate Member, September 7, 1904; died March 19, 1927.	
TURNER, John Patrick. Elected Associate Member, February 28, 1911; died February 23, 1927.	

## Total Membership of the Society, April 5, 1927

Members .....	5 268
Associate Members .....	5 547
Corporate Members .....	10 815
Honorary Members.....	14
Juniors .....	1 227
Affiliates .....	147
Fellows .....	8
Total .....	12 211